

Funding, financing and delivery options for large water projects in North Dakota

**Primer prepared for the North Dakota
State Water Commission**

[August 5, 2021]

The scope of this Primer

The North Dakota State Water Commission (“NDSWC”) engaged AE2S to undertake a Strategic Governance and Finance Study to guide decision-making relating to delivery of regional water system projects in the State. This study includes preparation of this white paper (the Primer) to identify potential federal, State, and local funding and financing options for large water projects, and to identify potential contracting structures for the delivery of such projects. This Primer is not intended to provide any recommendation to NDSWC regarding these options or relating to specific water projects in the State, but will inform discussion and consideration of different delivery and funding structures in the context of specific projects as part of the broader study.

Limitations of scope

- *AE2S is not acting as a municipal advisor on behalf of NDSWC as that term is defined in Section 15B of the Securities Exchange Act of 1934, as amended.*
- *The scope of this Primer was determined by NDSWC, and no representation is made as to the sufficiency of the Primer and related work for any other purposes. Any third parties that read the Primer must be aware that it is subject to limitations, and the scope of the Primer was not designed for use or reliance by third parties for investment purposes, or any other purposes. The Report does not evaluate the relative merits of existing or proposed large water projects in the State of North Dakota or elsewhere. Further, the Primer does not make any recommendations as to the sources of funding or financing that should be used to develop these or other projects, the methods of repayment or the ability of project beneficiaries to repay specific project costs.*
- *The findings and analyses contained in the Primer are based in part on publicly available information from reputable sources which are referenced in the Primer to provide additional context to specific statements of fact or opinion. No procedures were performed to evaluate the reliability or completeness of information publicly sourced.*
- *The Primer does not constitute legal opinion or advice. No representation is made relating to matters of a legal nature, including, without limitation, matters of title or ownership, legal description, encumbrances, liens, priority, easements and/or land use restrictions, the validity or enforceability of legal documents, present or future national or local legislation, regulation, ordinance or the like, or legal or equitable defenses.*
- *[Certain information in the Primer is based on estimates and/or assumptions about future events. Please note that there will usually be differences between estimated and actual results because future events and circumstances frequently do not occur as expected, and those differences may be material. No representation is made of, nor is any responsibility taken for, the achievement of estimated or projected results.]*
- *Should additional relevant data or information become available subsequent to the date of the Primer, such data or information may have a material impact on the findings in the Primer. There is no future obligation to update the Primer.*
- *The Primer assumes market conditions as at the date set out on the front cover and does not address potential effects of financial market disruption resulting from the Covid-19 pandemic or other significant political or economic events. Further analysis may be required if market disruptions persists.*

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Glossary

Abbreviation	Definition
AP	Availability payment
BEIS	Department of or Business, Energy and Industrial Strategy
BOOT	Build-operate-own-transfer
BOT	Build-operate-transfer
CFP	Capital Financing Program
CM	Construction manager
CMA	Construction manager-as-agent
CMAR	Construction manager-at-risk
COP	Certificate of participation
DB	Design-build
DBB	Design-bid-build
DBF	Design-build-finance
DBFOM	Design-build-finance-operate-maintain
DBM	Design-build-maintain
DBO	Design-build-operate
DBOM	Design-build-operate-maintain
DEQ	ND Department of Environmental Quality
DWU	Dallas Water Utilities
EPA	Environmental Protection Agency
GC	General contracting
GMP	Guaranteed maximum price
GO bond	General Obligation Bond
IPL	Integrated Pipeline Project
LBO	Lease-build-operate
LDO	Lease-develop-operate
MR&I	Municipal, Rural and Industrial
NAWS	Northwest Area Water Supply
ND	North Dakota
NDCC	North Dakota Century Code
NMFA	New Mexico Finance Authority
NRWA	National Rural Water Association
O&M	Operations & maintenance
OET	Oil Extraction Tax
PABs	Private Activity Bonds
RFP	Request for Proposal
RLF	Revolving Loan Fund
SAWS	San Antonio Water System
SPV	Special purpose vehicle
SRF	State Revolving Fund
SWIFT	State Water Implementation Fund for Texas
SWPP	Southwest Pipeline Project
TRWD	Tarrant Regional Water District
TTT	Thames Tideway Tunnel
TWDB	Texas Water Development Board
USBR	US Bureau of Reclamation
USDA	US Department of Agriculture
USEDA	US Economic Development Administration
USHUD	US Department of Housing and Urban Development
WIFIA	Water Infrastructure Finance & Innovation Act

A high-angle photograph of a powerful waterfall cascading over dark, mossy rocks. The water is white and frothy as it falls. In the background, a vibrant rainbow is visible in the mist created by the falling water. The surrounding landscape is lush with green vegetation.

Section A

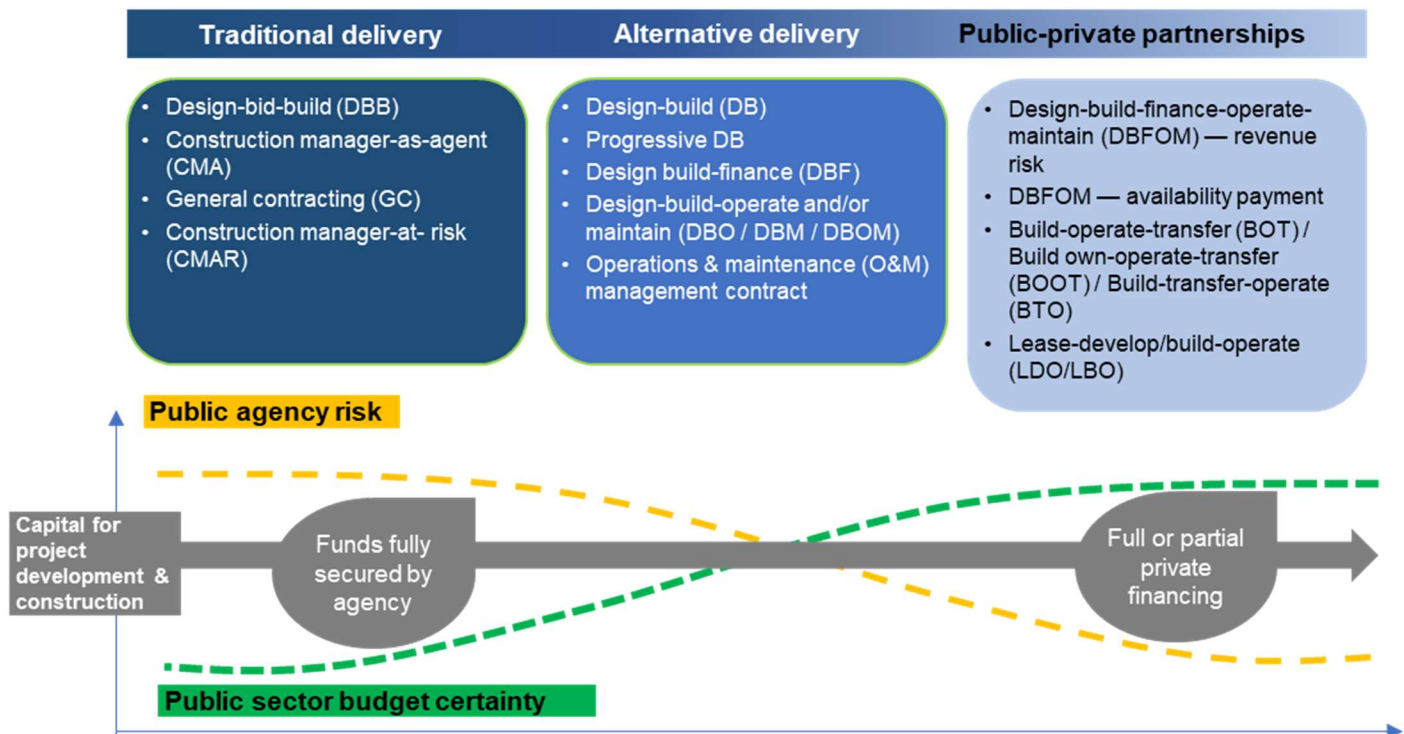
Potential contracting and delivery models

A. Potential contracting and delivery models

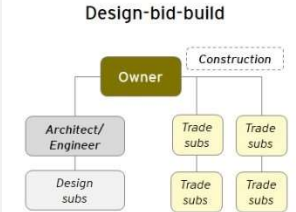
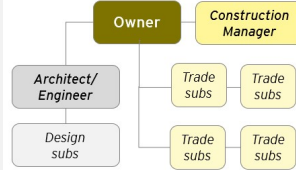
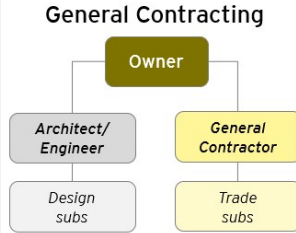
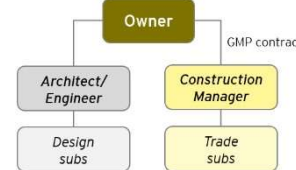
This section discusses the range of potential contracting and delivery models that can be applied to large water infrastructure projects, categorized as follows:

1. **Traditional delivery** — most projects to date have awarded contracts for the design/development, construction, operation, and maintenance of water infrastructure on a discrete basis via individual procurement processes, or in some cases identifying a single contractor or general project manager to oversee such processes, albeit not taking any material delivery risk
2. **Alternative delivery** — A number of contracting models combine multiple phases of project development to be awarded via a single procurement process, with the selected entity responsible for the delivery of those phases and associated risk and reward of doing so.
3. **Public-Private Partnerships (or “P3”)** — there is no single agreed definition of P3, but for the purposes of this Primer, P3 structures are ones that:
 - Are long-term performance-based contracts that allocate risks to the party best suited to manage them
 - Combine responsibility for design, build and operations and substantially allocate this responsibility to the private sector
 - Link private sector financial outcomes to contractual performance specifications.
 - Typically include some element of private financing to reinforce performance risk transfer

The graphic below summarizes the specific contracting/delivery models that can be allocated to the categories above and are described in more detail in this section.



1. Traditional delivery

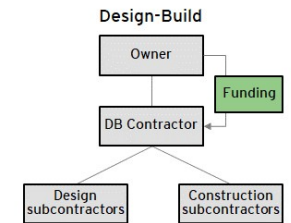

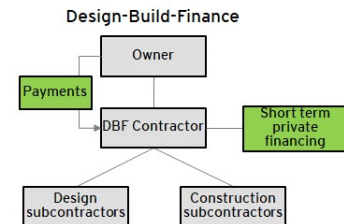
Model	Summary description
Design-bid-build (DBB)	<ul style="list-style-type: none"> DBB is a long-standing project delivery method whereby the public owner or sponsor contracts with separate entities for the design and construction of a project. This typically involves the competitive procurement of an architect or engineer to design the project, and then a request for bids from relevant companies to construct the project per the design specification. This may involve contracting and managing multiple contractors for different elements as relevant to project. Contracts are typically awarded with a heavy focus on the lowest cost bid(s). DBB is a relatively straight forward approach that gives projects owners the highest degree of control over project development and encourages reliable construction pricing given it is based on complete project design. However, the lack of interface between designer and contractor increases the risk of gaps or alternations leading to costly or time-consuming change orders, and means the owner retains the majority of risks associated with deliverability of the designed project, including all third party contracts. The separate and linear procurement processes can also make overall project timetable relatively protracted. 
Construction manager-as-agent (CMA)	<ul style="list-style-type: none"> The delivery structure is substantially as per the DBB model, but a public owner may opt to involve a CMA, typically early on in the project, to assist with scheduling and coordination, constructability review of the design, nonbinding estimating, value engineering recommendations, observation of the work for conformance with the contract, project documentation and similar activities. The CMA acts in purely advisory capacity (for a fee) and does not perform any construction work, or hold or directly enforce the contractor contracts, with the owner retaining the same control and risks as under a DBB. However, the owner can gain insights on the constructability and pricing from the CMA and receive additional support in making critical project decisions, which can potentially improve overall project risk management and the likelihood of success, particularly for complex or multi-contractor projects. 
General contracting (GC)	<ul style="list-style-type: none"> The GC model sees the public owner procuring a single prime construction contractor to hold all of the subcontracts and be responsible for scheduling and coordinating their work delivery and quality. Prospective GCs typically submit a fixed price lump sum bid for project delivery based on the design and engineering specifications and associated contract documents prepared by the owner, albeit this price may still be subject to change based on potential design issues or unforeseen conditions and/or delays outside the general contractor's control. Alternatively, a cost-plus contract can be agreed when the scope has not been clearly defined, whereby the owner agrees to pay the cost of the work, plus an amount for contractor's overhead and profit, with the owner retaining the risk and rewards of any cost overruns and savings. A GC approach reduces the procurement, coordination and contract management burden on the project owner, and can enhance the degree of cost certainty compared to a multiple prime contractor approach. However, the lack of interface between design and construction phases and responsible parties means the public owner still retains the balance of delivery risk. 
Construction manager-at-risk (CMAR)	<ul style="list-style-type: none"> Under a CMAR structure the owner will have two separate contracts for design and construction as per a standard DBB, but similar to GC, will procure a single prime contract with the CMAR for actual project delivery, which will then enforce scheduling and coordination obligations directly with regard to the subcontractors. The main difference is that a CMAR will typically be brought on earlier in the project to advise on project structuring and participate in the design process to identify constructability problems, budgetary concerns, material availability 

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	<p>issues, schedule concerns, and even designer selection. Although not responsible for design aspects that are unique to design professionals' obligations, these CMAR preconstruction services, combined with its familiarity with the project at the time construction begins, can reduce potential integration and interface problems during a project.</p> <ul style="list-style-type: none">▪ The CMAR will also provide a guaranteed maximum price (GMP) for project construction once the design specifications are sufficiently developed (i.e., to around 80-90%). All of the CMAR's costs are subject to open-book pricing, which gives the owner the ability to audit the CMAR's costs and verify that the proper costs are being charged against the GMP. Any costs exceeding the GMP that are not change orders are the financial liability of the CMAR, and if the project is completed under the GMP, the owner can retain all of the savings or establish a sharing provision with the CMAR.
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2. Alternative delivery

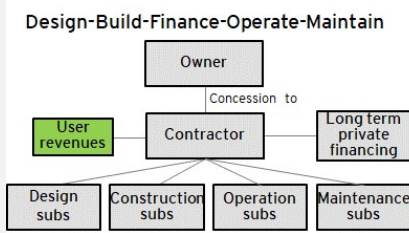
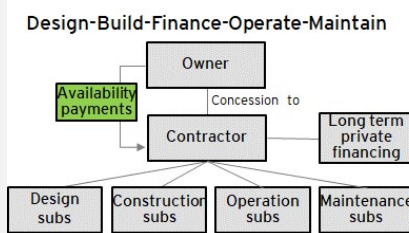
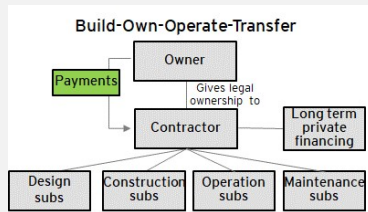
Model	Summary description
Design-build (DB)	<ul style="list-style-type: none"> A DB approach sees the public owner competitively procure a single contractor to provide both design and construction services. The owner usually completes project scoping and design to around 30% or at least a sufficient level to describe key design concepts and parameters, and then prepares request for proposals to select a DB contractor to finish the remaining design and undertake construction. The public owner will provide the capital required to undertake such works as required per the schedule developed by the contractor. The owner also retains control of the assets and is responsible for operation and maintenance, but the private entity takes on much of the risk associated with the initial project development process. The committed price is also usually more reliable due to the lower interface risk between design and construction and associated cost increases, although such cost certainty typically attracts a price premium to compensate for the additional risk transfer. 
Progressive DB	<ul style="list-style-type: none"> A Progressive DB is substantially the same as a DB except that the contractor is brought on even earlier in the design process and sometimes before the design has been developed at all, so that it can be developed by the owner and DB contractor in a step-by-step progression. This can be particularly helpful for more complex projects with less upfront scope certainty. In this case, the DB contractor is generally selected based on qualifications and a cost budget to develop the design to around 60-75%. At that point, a GMP for completion of design and construction is negotiated and the design progresses to the next step of completion, albeit if the negotiation fails, the owner can take what is commonly referred to as the "PDB off ramp" and use conventional DBB to complete the project Progressive DB has the same benefit of single interface as DB and allows earlier design input from the DB contractor. It can also reduce the owner's procurement cost and time given the reduced initial design specification expectations and qualifications-focused evaluation process. However, a Progressive DB does not offer the same competitive tension or price and schedule certainty for the design phase DB during the initial procurement phase 
Design-build-finance (DBF)	<ul style="list-style-type: none"> With the DBF procurement model, a single contract is awarded for the design, construction, and full or partial financing of a facility. Responsibility for the long-term maintenance and operation of the facility remains with the project sponsor but could be included in a separate agreement. This approach takes advantage of the efficiencies of DB approach and also allows the project sponsor to defer financing either completely or partially during the construction period. It can also accelerate project delivery where the project owner is construction funding or financing constrained and this is a key barrier to efficient project progression. More generally, this can enhance schedule certainty by reducing risks associated with funding availability. The need to repay third party investors can also further incentivize the contractor's timely performance and quality of delivery, since it will only receive payment from the owner once it meets the relevant construction completion tests. However, private capital is typically more expensive than public funding or financing, and lenders will also impose relatively strict creditworthiness tests to manage their repayment exposure, albeit such requirements and associated diligence can also help to enhance the overall quality and robustness of a project. 
Design-build-operate and/or maintain	<ul style="list-style-type: none"> DBO, DBM, DBOM delivery models combine the design and construction of a project with its operation and/or maintenance under a single contractual interface with the private sector. The financing for project development is provided by the owner, who will also make periodic payments to the contractor during the operating period that are typically fixed or per a pre-agreed schedule.

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(DBO / DBM / DBOM)	<ul style="list-style-type: none"> Operations refers to the day-to-day management of a project, including basic routine upkeep of key plant or equipment, while maintenance typically refers periodic or lifecycle upgrades or replacement of plant or equipment. Typically, both would be captured in the turnkey agreement (i.e., a DBOM), but it is possible that an owner may wish to have the contractor operate the project but separately procure or manage major maintenance works at a later date (i.e., a DBO approach), or it may wish take responsibility of operations itself and just retain the private partner for larger maintenance projects (i.e., a DBM) The combination of responsibility allows better integration and reduced interface risk across the various project phases and incentivizes the project design and construction to take account of long-term O&M issues and costs given the same party will be responsible for all. The effective transfer of risk for long-term operations and maintenance responsibilities also puts greater pressure on the development of clearly defined performance specifications, parameters and contractual remedies for failures to meet these, beyond the initial construction period, as well as a clear and implementable mechanism to connect payment to performance. <div data-bbox="1149 304 1502 499"> <pre> graph TD Owner[Owner] --> Funding[Funding] Owner --> OMP[O&M payments] Owner --> Contractor[Contractor] Contractor --> Design[Design subs] Contractor --> Construction[Construction subs] Contractor --> Operation[Operation subs] Contractor --> Maintenance[Maintenance subs] </pre> </div>
Operations & maintenance (O&M) management contract	<ul style="list-style-type: none"> Public agencies can use O&M agreements to transfer operation and management responsibilities separately to a private partner. Contractors can be paid either on a fixed fee basis or on an incentive basis, where they receive premiums for meeting specified performance targets. When in the purview of the public sector, decisions on major repairs can be affected by budget availability or other political sensitivities. Transferring O&M responsibilities to the private sector may allow owners to take better advantage of lifecycle cost and asset management practices.

3. Public-private partnerships

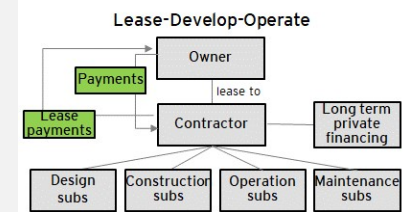
Model	Summary description
Design-build-finance-operate-maintain (DBFOM) — Revenue Risk	<ul style="list-style-type: none"> Under a revenue risk DBFOM, the responsibility for, design, build, finance and operation and maintenance of a project is transferred to the private partner, which in turn uses project revenues to repay its debt, cover the O&M costs over the contract term and earn a fair return on its equity investment. The contractor has a reasonable degree of autonomy in the collection and use of revenues to meet project costs and obligations (albeit sometimes subject to certain regulatory restrictions on rate setting), and if project revenues exceeds certain pre-defined thresholds, a revenue-sharing provision may be used for the owner to retain some financial upside. The DBFOM structure provides a high degree of risk transfer for project delivery to the private contractor, who is incentivized to perform not only by contractual provisions (including full handback of the infrastructure to the owner at the end of the contract term), but also by its reliance on effective performance to generate the necessary revenues to meet its financial obligations. However, such a contracting structure is only viable and effective if the current or anticipated revenues streams are sufficiently stable and creditworthy for the contractor to secure the necessary financing to fund project development. 
Design-build-finance-operate-maintain (DBFOM) — Availability Payment	<ul style="list-style-type: none"> For projects or assets without any associated revenue source, or where contractors are unable or unwilling to accept the revenue risk, the owner can still transfer DBFOM responsibilities and risks to a turnkey contractor if it can commit to make periodic fixed availability payments throughout the operating period that are set at a level to effectively cover the contractor's project costs, including any debt service. Such availability payments are typically tied to the contractor meeting the contractual performance specifications and may be adjusted to reflect under (or over) performance in accordance with the agreed payment mechanism. Availability payment-based DBFOM structures are typically more favorable to contractor partners because they represent a more stable and predictable source of repayment revenue to underpin financing requests relative to a revenue risk project, which can help to return more competitive bidding. However, both contractors and lenders will still put a significant degree of scrutiny on the robustness and creditworthiness of whatever underlying source of funding or revenues the owner intends to use to make the availability payments, and this can be particularly challenging where there is a heavy reliance on appropriations or budget cycles, or exposure to legislative provisions, prompting a focus on credit enhancement or backstops. But, the owner in turn benefits from a high degree of risk transfer, performance guarantees and budget certainty. 
Build-operate-transfer (BOT) / Build-own-operate-transfer (BOOT) / Build-transfer-operate (BTO)	<ul style="list-style-type: none"> BOT, BOOT and BTO arrangements are essentially the same as a DBFOM in terms of the transferred functional responsibilities to develop and operate the project over a specified contract term but makes a clearer distinction regarding the (temporary) change in legal ownership. While a DBFOM arrangement sees the legal ownership of the relevant site and water facility or infrastructure remain with the public owner throughout the term, under a BOT project, the private company owns the project assets until they are transferred at the end of the contract. BOOT is often used interchangeably with BOT and has a similar arrangement, while in contrast, in a BTO contract, asset ownership is transferred once construction is complete. 

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Lease-develop-operate (LDO) /Lease-build-operate (LBO)

- Where there is an existing facility or infrastructure, a private party may lease this from a public agency for a period anywhere from 25 to 100 years, invest its own capital to finance capital improvements, and then operate it during the lease period, including commitment to address repair and replacement needs throughout the term.
- The contractor makes a lease payment to the public owner either as an upfront lump sum or over time, and then has a reasonable degree of autonomy on the management of the facility or infrastructure over the lease period, subject to certain regulatory or contractual provisions.
- Lease structures are normally applied to projects with independent and stable revenue streams, whereby either the private entity is allowed to set and collect rates within certain parameters, or where the public entity sets and collect rates from consumers, paying the contractor a service fee over the term of the lease.



Section B

Water project funding and financing options



B. Project funding and financing options

This section sets out the potential sources of funding and financing that may be available to meet the upfront capital costs associated with large water infrastructure projects in North Dakota. Though often used interchangeably, the distinction between funding and financing sources can have important implications for project deliverability and affordability.

Different sources of funding and financing are available through public sector agencies or conduits at a federal and state level, as well as at a local level through the municipalities or districts benefitting from a particular project. There is also a growing interest in alternative sources that involve a greater role for private capital or credit enhancement tools. It is increasingly the case that a hybrid of different funding and financing sources is required to deliver large water projects in the US.

Funding

Public money made available to the project to fund as-incurred capital. This contributed capital is not intended to be repaid or carry a financing cost. Project revenues (including user rates, fees, taxes etc.) are also considered funding.

Financing

Money provided by a third party to a public or private borrower to pay for construction costs, concession payments and other large upfront project costs.

This capital is intended to be repaid and does carry a cost (i.e. interest or return on investment).

The following sources of funding and financing have been identified and summarized in this Section. The categorizations are based on the level at which funds are administered. The level at which funds can be used to meet state or local cost share are illustrated as a column next to the detailed description of each funding/finance source.

	Federal	State	Local (project beneficiaries)	Alternative
Funding source	<ul style="list-style-type: none"> Federal appropriations Federal agency grants¹ 	<ul style="list-style-type: none"> State appropriations Municipal, Rural and Industrial (MR&I) Water Supply Program ND Resources Trust Fund ND Legacy Fund ² 	<ul style="list-style-type: none"> Cash reserves User revenues (e.g., impact or connection fees, water rates, property taxes) Sales tax, property tax and special assessments 	<ul style="list-style-type: none"> Interest buy down (mechanism in conjunction with other sources)
Financing source	<ul style="list-style-type: none"> Environmental Protection Agency (EPA) Water Infrastructure Finance & Innovation Act (WIFIA) loan program Federal Agency loans¹ 	<ul style="list-style-type: none"> General obligation bonds Revenue bonds State Revolving Fund (SRF) loan programs State infrastructure financing authority WIFIA (SWIFIA) program Bank of ND Infrastructure Revolving Loan Fund ND Public Finance Authority Capital Financing Program ND Resources Trust Fund Infrastructure Revolving Loan Fund Bank of ND Community Water Facility Revolving Loan Fund ND Legacy Fund Loan ² 	<ul style="list-style-type: none"> Locally-issued / municipal general obligation bonds Locally-issued / municipal revenue bonds 	<ul style="list-style-type: none"> Private finance / project finance (debt+/or equity) Private Activity Bonds (PABs) Tax-exempt debt via non-profit conduit Lease financing (e.g., certificates of participation, lease revenue bonds) National Rural Water Association Revolving Loan Fund

¹ For example, relating to grant and loan programs administered by the US Department of Agriculture Rural Development, US Economic Development Administration Department of Commerce, US Department of the Interior Bureau of Reclamation)

² The North Dakota Legacy Fund is not a traditional state funding or financing source but is included as a potential source for further exploration

4. Federal sources

Source	Summary description	Available to State	Available to Local
Federal appropriations	<ul style="list-style-type: none"> A federal appropriation is essentially a law authorizing payment of funds from the Treasury for specific purposes— usually accompanied by authorization for an agency to incur obligations and ultimately draw that money to satisfy the obligations. The process and timing by which appropriations are proposed and approved is often closely tied to the federal government's annual budget. Federal appropriations can be available to state-level infrastructure projects both directly as a dedicated source of funding or indirectly via other grant or loan programs (described in subsequent categories). With an increasing proportion of federal appropriations for water infrastructure allocated to the various programs, the commitment of direct cash contributions to specific projects has declined in recent years. Any federal funding available will reduce the funding burden on the State and/or end users, though there is limited precedent for current or recent direct federal appropriations to State projects at scale. There is also a risk that the funding required to deliver the project on an efficient schedule will not materialize given the inherent risk of relying on the annual budget setting and legislative intent of the federal government. 	✓	✓
Federal agency grants and loans	<ul style="list-style-type: none"> There are a series of specific grants administered by federal agencies such as US Environmental Protection Agency (EPA), US Department of Agriculture (USDA), US Bureau of Reclamation (USBR), US Economic Development Administration (USEDA) and US Department of Housing and Urban Development (USHUD). Example programs include: <ul style="list-style-type: none"> EPA's Water Infrastructure Improvements for the Nation Act Grant Program: supports small and disadvantaged communities drinking water projects. USDA's Rural Development Water & Waste Disposal Loan & Grant Program: provides funding and long-term low-cost loans for drinking water, treatment, storage and distribution to eligible rural areas. USBR's Drought Response Program: offers financial assistance for resiliency projects that focus on reliability and availability of water. USBR's Title XVI program: provides funding for water reclamation reuse projects. USEDA's Public Works Program: provides revolving loan funding to infrastructure projects that enable the revitalization of distressed communities. USHUD's Community Development Block Grant and Loan Guarantee Program: provides grants to cities with fewer than 50,000 people and counties with less than 200,000 people. US Army Corps of Engineers (USACE): USACE is an agency within the Department of Defense with both military and civil works responsibilities. Congress directs USACE's civil works activities through authorization legislation, annual and supplemental appropriations. USACE will use these federal appropriations directly in the planning and construction of projects. Federal agency grants have no repayment obligations while federal agency loans typically have below market interest rates. However, most federal grants and loans are for a specific type of water project and they are only able to make up a small portion of the overall capital requirement. They also often target small or disadvantaged communities. 	✓	✓

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EPA WIFIA loan program	<ul style="list-style-type: none">▪ The WIFIA program is a federal loan program administered by the US Environmental Protection Agency (EPA) that can finance up to 49% of eligible project costs, subject to a maximum of 80% from federal sources. Eligible borrowers include local, state, tribal, and federal government entities; partnerships and joint ventures; corporations and trusts and Clean Water and Drinking Water State Revolving Fund (SRF) programs. Since its first round of applications in 2017, WIFIA has closed 41 loans totaling \$7.8b in credit assistance to help finance \$16.8b for water infrastructure projects.▪ The program assumes a minimum project size of \$20m for large communities and \$5m for small communities with population of 25,000 or less. The interest rate is equal to or greater than the US Treasury rate of a similar maturity at the date of closing, and projects can defer repayment for up to five years from substantial completion, subject to a maximum maturity date of 35 years from completion. Borrowers also have flexibility to draw and amortize the loan based on project needs and the anticipated availability of project revenues.▪ The relatively low interest rate, flexible terms, scalability and eligibility of both public and private borrowers are making WIFIA an increasingly attractive source of financing for a wide range of water projects, as part of a hybrid capital plan. Projects must demonstrate, however, that they are creditworthy with a dedicated source of repayment or security pledge to support repayment, and that they meet the EPA's selection criteria for the particular application year. Projects are also subject to various federal cross-cutter requirements, including but not limited to NEPA, Davis-Bacon, and American Iron and Steel provisions. The application process and timing, and the competitive nature of such process, also needs to be factored into the overall project schedule and financing plan.	✓	✓
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2. State sources

Source	Summary description	Available to State	Available to Local
State appropriations	<ul style="list-style-type: none"> The legislature has the authority to appropriate moneys for either general grant programs that can benefit projects, loan programs that projects could apply, or directly to specific line items. These appropriations may come from any revenue source the legislature deems appropriate. In the case of water projects, appropriations are primarily administered and awarded via the State Water Commission, and largely come from the North Dakota Resources Trust Fund (described below). The Commission allocated water-related appropriations of approximately \$1B in the period 2015 to 2018, and to date in the current 2019-2021 biennium, has allocated around \$225M, ranging from ~\$25k to \$112M. These span a range of purposes and are not always project-specific. State appropriations have no repayment obligations, however, the allocation of appropriations depends on the State's annual budget setting, so that the availability of funds year-to-year may be uncertain even when legislative intent is given and may not provide sufficient funding certainty to accommodate the most efficient delivery schedule. Specific projects are also competing with a wide range of state and local funding requirements that need to be supported by the Commission. 	✓	
MR&I Water Supply Program	<ul style="list-style-type: none"> The federal Municipal, Rural and Industrial (MR&I) Water Supply Program was authorized by Congress through the 1986 Garrison Diversion Unit Reformulation Act and it is jointly administered by the Garrison Diversion Conservancy District, and the State Water Commission. The 1986 Act authorized a MR&I grant program of \$200M, which has all been expended. An additional \$600m was authorized by the Dakota Water Resources Act of 2000 and allocated to various regional projects, of which approximately \$83M remains for the MR&I grant program. The MR&I program is a dedicated source of funding for major water supply projects in North Dakota and has to date funded system expansions and improvements across dozens of municipal and rural water systems, although annual MR&I funding is dependent upon US Congressional appropriation, which introduces some risk regarding the timing and volume of funds. 	✓	
ND Resources Trust Fund (RTF) / RTF loan	<ul style="list-style-type: none"> The ND Resources Trust Fund (RTF) was established in 1991 to allocate a percentage of Oil Extraction Tax (OET) revenues to the resource trust fund to be expended on the construction of water projects and energy conservation program. Provided for both in statute and in the North Dakota Constitution at Article X, § 22, the North Dakota Century Code allocates 20.5% of OET collections to the RTF. The fund received over \$230M in Oil Extraction Tax dollars during the 2015-2017 biennium and over \$350M during the 2017-2019 biennium. The RTF forms the majority of the State Water Commission's budget and can be used to allocate grant-based funding to specific projects or initiatives in the form of state appropriations (as noted above). The RTF can also be leveraged to as a source of lending to specific projects. Senate Bill 2233 amendments in 2015 established an Infrastructure Revolving Loan Fund within the RTF, which means that in addition to the OET as a source of income, the fund earns interest on the repayment of loans made for certain regional water projects. Such loans are managed and administrated by the Bank of North Dakota, and interest is charged at 1.5%. The Bank may deduct an annual service fee of 0.5% for administrating the infrastructure loan fund. Under the legislation, 10% of oil extraction moneys deposited in the RTF are made available on a continuing basis for making loans to water supply, flood protection, or 	✓	✓

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	other water development and water management projects. Projects not eligible for the State Revolving Fund loan program (see below) will be given priority for these funds		
State Revolving Fund (SRF) loan programs	<ul style="list-style-type: none"> The Clean Water and Drinking Water SRFs were established in 1990 and 1998 respectively to enable North Dakota to receive federal capitalization grants authorized under the Clean Water Act and Safe Drinking Water Act. The SRFs are used to make below-market interest rate loans to political subdivisions to finance authorized projects, including wastewater treatment, non-point source pollution control projects and public water systems. The SRF programs have jointly provided more than \$1.5b in water and wastewater infrastructure funding in North Dakota since they were established. Although the original source of funding is at the federal-level, allocated to individual states by the US EPA, the funds are administrated and awarded to projects at a state-level by the ND Public Finance Authority (PFA) and the ND Department of Environmental Quality (DEQ), which also set the interest rates. The current interest rate for SRF loans is 2%, while the rate for eligible recipients that do not qualify for tax exempt financing is 3.0% — both rates include a 0.5% administrative fee. Interest rates are fixed for a term up to 30 years, depending on the useful life of the project, and the SRF only requires borrowers to pay interest on the loan as funds are drawn (compared to a bond issuance, for example, whereby interest would accrue on the full amount). While the SRFs ultimately rely on federal-level budgeting and fund allocations, they are also relatively proven and stable financing programs with proven track record and a strong credit rating (Aaa by Moody's and AAA by S&P), and the state has a reasonable amount of discretion over the allocation and terms of individual financing applications, subject to certain criteria. 		✓
State infrastructure financing authority WIFIA (SWIFIA) program	<ul style="list-style-type: none"> The SWIFIA program was authorized by Congress in section 4201 of America's Water Infrastructure Act of 2018 and is a new loan program exclusively for State infrastructure financing authority borrowers (such as SRFs). The EPA defines State infrastructure financing authority as the State entity established or designated by the Governor of a State to receive a capitalization grant provided by, or otherwise carry out the requirements of, title VI of the Federal Water Pollution Control Act (33 U.S.C. 1381 et. seq.) or section 1452 of the Safe Drinking Water Act (42 U.S.C. 300j-12). The SWIFIA program shares many of the same terms as the federal WIFIA program — for example, \$20m minimum project size; 49%: maximum portion of eligible project costs to be financed; 35 years: maximum final maturity date from first disbursement; 5-year repayment grace period; interest rate equal to or greater than the US Treasury rate of a similar maturity at the date of closing. In FY 2020, EPA invited the California State Water Resources Control Board, Iowa Finance Authority, and Rhode Island Infrastructure Bank to apply for loans totaling \$695m. 	✓	
State General Obligation (GO) bonds	<ul style="list-style-type: none"> A GO bond is a type of municipal bond that is secured by a state government's pledge to use legally available resources, including tax revenues to repay bondholders. They are administered by State of North Dakota, State Treasurer and State Industrial Commission. GO bonds are not water specific and can be issued for a wide range of infrastructure and project needs. The North Dakota Debt Limit Initiative (1918) limits the sum of all outstanding state debt to no more than \$2m. Bonds in excess of \$2m need to be secured by mortgages. GO bonds can have up to a 20-year maturity and debt service is paid from an excess mill levy on all taxable property in the state. GO bonds are typically considered relatively low risk by investors given they are backed by a full faith and credit pledge of the state for the prompt and full payment of all bonds. 	✓	
State revenue bonds	<ul style="list-style-type: none"> The state may also issue revenue bonds for the purpose of providing part or all of the funds required for an infrastructure project, provided such project generates sufficient revenue to be pledged as a source of repayment or some other dedicated source of revenue is identified and pledged. 	✓	

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	<ul style="list-style-type: none"> Since revenue bonds are only secured by specific project revenues, they are not subject to the constitutional debt limits and do not add to state's total debt outstanding. However, revenue bonds are considered riskier than GO bonds and typically bear higher interest rates, and there is limited precedent for revenue bonds for water infrastructure projects at a state level. 		
Bank of ND Infrastructure Revolving Loan Fund	<ul style="list-style-type: none"> The Bank of ND Infrastructure Revolving Loan Fund provides loans to political subdivisions, the Garrison Diversion Conservancy District and the Lake Agassiz Water Authority for new construction, repair, replacement of water or wastewater treatment plants; sewer, storm sewer and water lines; transportation infrastructure including curb and gutter construction; and other infrastructure needs Interest is charged at a fixed rate of 2% and cumulative loan amounts may not exceed \$15m per applicant over a maximum 30-year term. This loan program is intended to provide gap funding if the full project cost cannot be met through other funding sources or if there are no other funding sources available, and so an applicant must attempt to access other state and federal government funding options first in order to qualify for these funds. Application windows are opened as funding is available. 		✓
ND Public Finance Authority (PFA) Capital Financing Program (CFP)	<ul style="list-style-type: none"> Under its CFP, the PFA makes loans to North Dakota political subdivisions for any purpose for which the political subdivision has the legal authority to borrow money, subject to credit requirements and certain program requirements. Financing is available in any dollar amount as long as the ability to repay can be demonstrated. The PFA raises the funds to be loaned through public bond issuances and the interest rates payable by a political subdivision are based on market rates set through a competitive bid process when the PFA issues and sells its bonds. Since the CFP has been assigned a rating of "AA-" by S&P, it is typically able to achieve relatively low interest rate on its bonds and pass this through to the loans made under the CFP. 		✓
Bank of ND Community Water Facility Revolving Loan Fund	<ul style="list-style-type: none"> The primary use for the Community Water Facility Revolving Loan Fund is supplementary financing in conjunction with the federal USDA Rural Development program, and it may be used when the cost of community water projects exceeds the loan limits set by the program (75% of eligible cost). An applicant may be a city, association, cooperative or corporation operated on a nonprofit basis with the legal authority to construct, operate and maintain water facilities, and must demonstrate the ability to repay the loan in accordance with USDA Rural Development program requirements. The maximum borrowing is 50% of the total project cost or the remaining available funds in the revolving account, with a fixed interest rate of 3% and maximum 40-year term. 		✓
ND Legacy Fund	<ul style="list-style-type: none"> The ND Legacy Fund was created in 2010 for the deposit of 30% of tax revenues from oil and gas production or extraction (ND Constitution Article X, Section 26). The legislation required that the principal and earnings of the legacy fund not be expended until after June 2017, and an expenditure of principal after 2017 requires a vote of at least two-thirds of the members elected to each house of the legislative assembly. Furthermore, not more than 15% of the principal of the Legacy Fund may be expended during any biennium. The fund holds around \$6.8b at present and is expected hold nearly \$1b in interest earnings by the end of the next budget cycle. None of the fund's principal has yet been expended but approximately \$455m has been spent from the earnings since 2017. The Legacy Fund is not a traditional source of state funding or financing for water infrastructure projects, but policy makers are increasingly exploring and discussing ways to leverage the fund in the form of both grants and low-interest loans. 	✓	✓

3. Local (project beneficiary) sources

Source	Summary description	Available to State	Available to Local
Cash reserves	<ul style="list-style-type: none"> Cash reserves include unrestricted and restricted cash on a local authority's balance sheet that could be used to fund the local user cost share portion of water infrastructure projects. Cash reserves are directly available and don't need repayment, but they are also subject to local authority's annual budget and other potential competing priorities, and the availability may not be consistent and certain each year. There are many different types of cash reserves and how they may be used for projects can be very specific to each local authority. There are also dedicated cash reserves to support long-lead regional water supply projects in the form of the Replacement and Extraordinary Maintenance Fund (REM). This, along with other renewal and replacement type funds, are generally intended to cover costs of an extraordinary nature and/or to replace parts of an aging distribution system. While this funding is not generally available for project completion or buildout, it may provide a source of funding in the future.. 		✓
User revenues (e.g., connection fees and water rates)	<ul style="list-style-type: none"> Local municipalities or water districts typically receive revenue from water users in the form of: <ul style="list-style-type: none"> Connection fees or other upfront charges: typically, a one-time charge imposed by local governments to mitigate the impact on local infrastructure caused by new development and recover the costs of providing necessary capacity to serve this new demand. Charges vary by region and can also be known as impact fees, capacity fees, capital recovery charges, readiness to serve fees, capital contribution fees, capital facility fees, system development charges, system buy-in charges, Water rates: charge for water consumed by residential, commercial or agricultural customers, set by local districts or public utilities and charged via water bills. The rate structure can vary, from fixed fee to flat rates, uniform rates or seasonal rates, to tiered rates based on volumetric blocks. User revenues are a direct source of funding that don't require repayment and are typically used to either fund reserves for capital projects or repay debt. However, given they are typically required to fund day-to-day utility operations or major maintenance or expansion of existing infrastructure, sufficient excess revenue may not exist to cover the cost of additional large-scale projects without significant reserving or increases in rates or fees. Such reserving for capital projects is potentially more likely with connection fees or equivalent, while water rate revenue can typically be better leverage as a pledged source of debt service for borrowing to raise capital for project upfront project development. 		✓
Sales tax, property tax and special assessments	<ul style="list-style-type: none"> A sales tax is a tax paid to a governing body for the sales of certain goods and services and allows the seller to collect funds for the tax from the consumer at the point of purchase. The North Dakota state sales tax rate is 5% for most retail sales but can be up to 8.5% depending on local municipalities. North Dakota assesses local sales? tax at the city and county level but does not assess local sales? tax for special jurisdictional areas such as school districts or transportation authorities. A municipal agency or district may also have the authority to levy a property tax assessment for specific projects or services, which would typically earmark a portion of existing or increased property taxes for the benefitting area. A similar but distinct concept is a "special assessment", which a city or municipality can use to pay for infrastructure improvements that benefit properties, such as water main replacement and flood protection projects, with the cost of such. projects divided among properties that benefit from them and recovered as an additional levy. Sales taxes, property taxes and special assessments can be pledged in part or full to fund specific project capital costs or be used as a source of debt service to borrow against. This can involve earmarking of existing taxes for a specific purpose, increase 		✓

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	<p>existing taxes and siphoning the additional revenue for such purposes, or the creation of a new tax or levy for a specific purpose or project.</p> <ul style="list-style-type: none"> Alternatively, the authority to levy these taxes or special assessments can be considered a form of credit backstop to raise funds in the event the primary funding plan is unable to meet the project's capital needs. Any such tax increases or new levies are typically subject to legislative process and approvals. In North Dakota, there is already some precedent for city and county-level sales and use taxes being levied to fund major water infrastructure projects, specifically the Fargo-Moorhead Flood Diversion Project (see case studies). The project has also established special assessments to act as credit backstops in the event these taxes are insufficient to meet project costs, and while no property tax assessments are currently envisaged in the financial plan, it is noted that one of the participating county-level water resource districts does have legislative authority to levy these if necessary. 		
Locally-issued / municipal general obligation bonds	<ul style="list-style-type: none"> Similar to state-level GO bonds, the North Dakota Century Code stipulates that local municipality outstanding GO debt must not exceed 5% of the assessed value of taxable property in the relevant jurisdiction, albeit subject to a provision to change if approved by two-third of the voters. However, for water and sewer projects, the additional indebtedness approved by voters may never exceed an additional 4% of the assessed property value. Locally-issued GO bonds are similarly backed by a full faith and credit pledge to repay, albeit typically have lower credit ratings (and therefore higher interest rates) than state-issued GO bonds. While local GO bonding capacity is typically juggling competing funding needs across multiple infrastructure sectors (i.e., not just water), there is reasonable precedent and track record of municipalities funding local and regional water projects from bond proceeds. 		✓
Locally-issued / municipal revenue bonds	<ul style="list-style-type: none"> The North Dakota Constitution allows political subdivisions, including cities, water districts and water resource districts to issue revenue bonds, subject to a maximum 40-year term. Revenue bonds are payable solely from user revenues generated by a particular enterprise, such as a water or sewer system or utility. In addition to traditional water and sewer revenue bonds, some cities and counties have issued sales tax revenue bonds. 		✓

4. Alternative sources

Source	Summary description	Available to State	Available to Local
Private financing (e.g., debt and equity)	<ul style="list-style-type: none"> Private finance for infrastructure projects can be raised in various ways, including taxable bonds, private placement, bank debt and private equity. Based on market precedent in the US and globally, private financing is typically most successful when part of an alternative delivery model structure that seeks to wrap the responsibility for project delivery and associated risk transfer with a single counterparty and generate a fixed price for upfront project development (for example, DBF or DBFOM delivery models as described in Section A). The debt-equity ratio is highly dependent on the specific risk the private sector developer is bearing. For example, a typical Availability Payment deal may only require 8-10% of the financing to be equity, while deals with revenue risk can have as much as 40% equity. Taxable debt is typically more costly than tax-exempt debt where interest is not subject to federal income tax to entice investors to accept a lower interest rate. Equity typically requires a higher return still to reflect the relative risk profile (i.e. dividends are not guaranteed and are typically lowest in the cash flow waterfall, thereby contingent on project performance). As such, the blended cost of capital will generally be higher than a purely debt financing. However, private financing can serve a number of purposes in delivering large-scale water projects, such as project acceleration (particularly in the face of project owner liquidity constraints), cost and performance efficiencies and enhanced risk transfer. 	✓	✓
Private Activity Bonds (PABs)	<ul style="list-style-type: none"> PABs are issued by (or on behalf of) a local or state government on behalf of a private entity. Instead of being issued to finance facilities solely for public use, they are issued for the benefit of, or due to the substantial participation of, private entities. PABs utilize private capital instead of public debt, and unlike typical municipal bonds, the payment of principal and interest is the responsibility of the private business receiving the proceeds, rather than of the issuing government agency, thereby shifting the risk and long-term debt to the private partner. The structure must meet a number of “private business” test requirements to be a categorized as a PAB rather than a government bond. By default, PABs are taxable, but certain specified categories of “qualified” PABs can be tax-exempt. In the water sector, bonds are eligible for tax-exempt treatment if they are issued to fund (a) facilities for the furnishing of water (e.g., drinking water supply systems), or (b) sewage facilities. Each state is subject to a federally-set annual PABs limit, and particular categories of issuance within this are also subject to volume caps set at a state level. Eligible water projects are subject to such a cap, albeit proposed bipartisan legislation is seeking to remove this. In the case of North Dakota, the annual PAB volume cap has remained at the highest absolute \$ value (i.e. \$300m–\$311m) in recent years, supplemented by a (three-year) carry forward of around \$700m+ each year. Issuances within the year have similarly stayed around \$300m, hence the consistent carry-forward. However, most if not all issuances have related to “Mortgage Revenue”, with little or none for exempt facilities, and as such there is limited precedent for use of PABs to fund water projects in the state. 	✓	✓
Tax-exempt debt via non-profit conduit 501(c)(3)	<ul style="list-style-type: none"> A water project may take advantage of a 501(c)(3) non-profit organization’s tax-exempt status, or utilize internal Revenue Service (IRS) Rule 63-20 that allows a private nonprofit public benefit corporation to be set up to issue tax-exempt debt on behalf of a municipality or government agency to deliver a public project. Interest on a nonprofit / qualified 501(c)(3) bond is exempt from federal income taxation, alternative minimum tax and, usually, State income tax. Absent true equity 	✓	✓

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	<p>subordinated tax-exempt debt can also be used to incentivize long-term participation and performance in the project, although it provides a fixed rate of return and the degree of risk transfer is more limited than equity.</p> <ul style="list-style-type: none"> Although a model that is already being used to fund US infrastructure projects, it is relatively untested structure for large-scale/capital intensive infrastructure projects — and water in particular — having mainly been used for smaller-scale social infrastructure or real estate projects to date. 501(c)3 organizations are also typically subject to a series of strict annual certification and compliance requirements. 		
Interest buy-down	<ul style="list-style-type: none"> Interest buy-downs involve using public funds to lower the effective interest rate that project beneficiaries pay even if they are raising financing at a higher market rate (for example, via locally-issued bonds or private financing), to the point where different financing options become relatively competitive on a cost basis. In this model, the State would provide a subsidy payment based on the difference between debt service at the market rate and some other target (public sector / tax exempt) preferential rate. This can help to make a financing source viable that otherwise would not be competitive with other options on a cost basis, but is attractive for other reasons (i.e., accelerated project delivery, managing debt capacity limits). It also enables the State to support more or larger projects with the same amount of funding, since it is only providing the debt service differential rather than the entire required capital sum, although since the interest subsidy is not repaid, it also has a more depletory effect on State funds compared to a low interest loan for example. Although not water specific, there is already precedent for interest buy-down mechanisms in North Dakota, in particular via the Bank of North Dakota's PACE and Flex programs. 	✓	✓
Lease financing (certificates of participation, lease revenue bonds)	<ul style="list-style-type: none"> A lease financing structure sees the private contractor financing the project via certificates of participation or lease revenue bonds, and "leasing" project to the government agency via a Lease-Purchase Agreement, for which it receive lease payments that used to satisfy debt service on such financing The financing raised to fund the project is not considered an obligation or indebtedness of the public sector provided a non-appropriations clause is included that articulates rental/lease payments are subject to biennial appropriations, with no assurance that such funds will be appropriated in any fiscal year. Where such funds are not appropriated, the Lessee's obligations under the Lease-Purchase Agreement will simply be terminated. The raising of finance to fund the underlying project /asset being leased is typically via either through lease revenue bonds (LRBs) — where permitted by State — and certificates of participation (COP), the latter being securities whereby investor purchases a share of the lease revenues of a program rather than the bond being secured by those revenues. In both cases, the interest is tax-exempt for Federal, State and AMT?? purposes. The University of North Dakota leveraged this model for its steam plant upgrade based on issue of \$95m COPs (of which \$79m tax-exempt) by Bank of North Dakota in 2018, to be repaid via appropriations received from the State. North Dakota building authority issued LRBs to finance the acquisition, construction, improvement or equipping of certain facilities, while several school districts, park districts, and counties in North Dakota have used lease revenue bond financing. 	✓	✓
National Rural Water Association (NRWA) Revolving Loan Fund (RLF)	<ul style="list-style-type: none"> The NRWA RLF was established under a grant from USDA's Rural Utilities Service to provide financing to eligible utilities for pre-development costs associated with proposed water and wastewater projects. RLF funds can also be used with existing water/wastewater systems and the short-term costs incurred for replacement equipment, small scale extension of services or other small capital projects that are not a part of your regular operations and maintenance. 		✓

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	<ul style="list-style-type: none">▪ Systems applying must be public entities or nonprofit corporations including cooperatives, with up to 10,000 population and rural areas with no population limits.▪ Loan amounts may not exceed \$100,000 or 75% of the total project cost, with a maximum loan term of 10 years. Loans will be made at the lower of the poverty or market interest rate as published by USDA's Rural Utilities Service, with a minimum of 3% at the time of closing.		
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Section C

Example case studies

C. Example case studies

This section provides a summary of six large water infrastructure projects in the US and globally that are related to regional water supply needs. As such, they are particularly relevant to the four major water supply projects that the North Dakota State Water Commission is currently charged with delivering. Specifically, this refers to the Northwest Area Water Supply project (NAWS), Southwest Pipeline Project (SWPP), Western Area Water Supply project (WAWS) and the Red River Valley Water Supply Project (RRVWSP).

These example projects have deployed a range of contracting and financing structures, focusing particularly on alternative and P3 delivery as an emerging trend. These examples reflect delivery-financing combinations based on real-world project examples, but are not exhaustive of all possible project structures.

The example project case studies summarized in this section are:

- 1) Fargo-Moorhead Area Diversion Project, North Dakota (DBFM & DBB-federal portion)**
Relevance: A major water project in North Dakota delivered utilizing a split delivery, which takes advantage of both a locally led P3 component and a traditional federal DBB component.
- 2) San Antonio Pipeline, Texas (DBFOM)**
Relevance: A pipeline project delivered under a P3 structure with a hybrid of public subsidy and project revenues.
- 3) Stockton Delta Water Supply Project, California (Progressive DB)**
Relevance: A pipeline project delivered under a Progressive DB structure. Government agency was responsible for financing.
- 4) Buckman Direct Diversion Project, New Mexico (DB)**
Relevance: A pipeline project delivered under a DB structure. Government agency was responsible for financing.
- 5) Thames Tideway Tunnel, London, UK (DBF/OM)**
Relevance: A mega sewerage project delivered under a DB/FOM hybrid structure, with separate private entities responsible for DB and FOM. A significant government direct contribution was also included.
- 6) Wentworth to Broken Hill Pipeline, New South Wales, Australia (DBOM)**
Relevance: A pipeline project delivered under DBOM structure. The private partner was responsible for DBOM, while the public agency was responsible for financing the project.

This section also provides an overview of how similar regional water projects are funded in a selection of other states and regions, specifically:

- Neighboring states: South Dakota, Minnesota state, Montana
- Lewis & Clarke Regional Water System
- Texas state funding programs
- Texas Tarrant Regional Water District Integrated Pipeline Project
- North Carolina state funding programs
- Other innovative funding approach examples

Case study 1: Fargo-Moorhead Area Diversion Project, ND

The Fargo-Moorhead Area Diversion Project is a \$2.75b effort to establish permanent flood protection measures for the flood-prone Fargo-Moorhead Metro area. The current plan includes a 20,000 cubic feet per second, 30-mile long diversion channel with 30,000 acres of upstream staging, as well as 20 miles of dam and embankment.

The US Army Corps of Engineers (USACE) will deliver the dam and embankment while the channel and associated infrastructure will be delivered via a public-private partnership, and other elements of the comprehensive project will be delivered through separate contracts.

Delivery model

Traditional federal design-bid-build (DBB) for the USACE portion, and Availability Payment-based design, build, finance and maintain (DBFM) for the P3 components.

Sources of funding & financing

The USACE portion of the project is funded via federal appropriations according to a Project Partnership Agreement with local sponsors, which commits the federal government to \$750m in grant funds. The non-federal portion of the capital expenditures, including the P3, will be funded via State appropriations, and local sales and use taxes in Cass County and the City of Fargo.

The State of North Dakota has committed \$750m in total to the project, and the local sponsors are seeking \$86m from the State of Minnesota. Local voters have approved city and county-level taxes, specifically a ½ cent sales tax levied by Cass County, and a series of City of Fargo sales and use taxes (i.e., a ½ cent City Flood Control Tax, a ½ cent City

Infrastructure Tax and a ¼ City Capital Improvement Tax). A Special Assessment District has also been authorized as a financing and funding backstop in the event sales tax revenues are insufficient.

The local sponsors will use a number of tools and delivery approaches to pay for capital expenditures as part of the P3 contract. Milestone payments will primarily be funded by North Dakota appropriations, a North Dakota SRF loan request, and an EPA WIFIA loan. Availability payments will primarily be funded through local sales and use taxes. The P3 developer will finance against these availability payments and a USDOT PABs allocation has been secured, which the P3 developer can access to reduce financing costs.

Key challenges & success factors

Complex stakeholders: The project involves multiple federal agencies, two states, two cities and two counties. A "Split Delivery Model" was established to delineate USACE vs non-federal work. A Metro Flood Diversion Board of Authority was formed between the local political subdivision (comprising Fargo, Moorhead, Cass County, Clay County and the Cass County Joint Water Resources District) to deliver the non-federal work, including the P3. Mitigation of project impacts was also a key challenge with affected stakeholders.

Hybrid funding plan and risk allocation: Developing a financial plan that structured the project as an Availability Payment DBFM to facilitate substantial risk transfer and timely delivery through access to private finance, but incorporating publicly financed milestone payments, in a combination that addresses key factors such as affordability and inter-generational equity.

Case study 2: San Antonio Water Vista Ridge System, TX

The ~\$1b Vista Ridge Pipeline is a 142-mile water project completed in 2020 to pump and distribute fresh water from wells in the major Carrizo-Wilcox aquifer in Texas (also extending into parts of Arkansas and Louisiana) through to the City of San Antonio municipal water utility system. The project will provide 20% more water for San Antonio, and also provide protection to the Edwards Aquifer during drought.

Delivery model

The San Antonio Water System (SAWS) entered into a 30-year agreement with selected developer, Vista Ridge LLC, in 2014 for the design, build, finance, operate and maintenance (DBFOM) of the project

Ownership of the wells and pipeline system will transfer to SAWS at the end of the term (which may be extended to 50-years), after which a separate agreement with the owner of the groundwater leases will give SAWS the ability to continue production for an additional 30-year term and deliver the water at a lower price.

Sources of funding & financing

The project was fully funded by private debt and equity, with the debt obtained as a \$875m construction financing under a five-year credit facility with a syndicate of nine international banks, reaching financing close in November 2016. The loans

were able to achieve favorable pricing due to, among other factors, the strong credit rating of the offtaker (contracted buyer) SAWS (Aa1/AA+/AA+). This construction debt was refinanced in 2020 and is understood to have been termed out with a \$1b+ fully amortizing private placement bond that will be paid back in instalments between now and the end of the 30-year concession period. The revenue to meet this debt service is being provided by SAWS in the form of a fixed unit price for water delivered, plus payment of certain agreed O&M and utility costs on a passthrough basis.

Key challenges & success factors

Transfer of risks and responsibilities: The private developer assumed all responsibility for securing and consolidating the pool of necessary wells, leases, water rights and permits, dealing with nearly 500 property owners along the 142-mile pipeline length.

Change in the sponsor group before financial close: The financial stress of the parent company of the winning developer and majority equity owner, Abengoa, between commercial close and financial close, resulted in the transfer of 80% of the equity to the project's prime contractor, Garney Companies Inc. and a series of project contracts being re-finalized, which caused some project delays.

Case study 3: Stockton Delta Water Supply Project, CA

The ~\$200m Delta Water Supply Project was developed to provide supplemental water supply system for the City of Stockton.

The project, completed in 2012, comprises a surface water intake facility on the San Joaquin River, 13-miles of new pipelines to convey the raw water to a new 30-million-gallon-per-day (mgd) water treatment facility located just north of the City (expandable to 60 mgd initially and as much as 160 mgd long-term), and 7-miles of pipelines to deliver treated water to the City's distribution system.

Delivery model

The intake facility was delivered via traditional design-bid-build (DBB), while the pipelines and water treatment plant used a progressive design-build (DB) structure that saw City of Stockton Municipal Utilities Department work with CDM Smith as prime contractor. Phase 1 of the project included 65% design and a cost proposal for project completion, and a potential offramp. The City moved forward with CDM Smith for phase 2 design completion and construction.

Sources of funding & financing

The project was funded completely by public financing, of primarily water revenue bonds issued by Stockton Public Financing Authority, as well as some state grants from California Department of Water Resources.

Key challenges & success factors

Design & Construction challenges: The pipeline design and construction involved several technical challenges, including difficult soil conditions, groundwater dewatering and tunnel crossings of major canals, interstate highway, major railroad and roadways. A plume of the petroleum contamination was also discovered on the pipeline route. The city had to obtain a permit from the state to build a hydraulic barrier around the contaminated area to contain it.

Different delivery models for different project

components: DBB was used for the intake facility on the river. A separate DB was used for the pipelines and water treatment plant. Aligning the design and construction standards among the two components was a key factor for project success.

Addressing other sustainability goals: The project incorporated sustainable building practices, particularly in the water treatment plant's administration and operations building. Photovoltaic solar panels on the parking area carport surfaces provide more than half the building's power—a feature that helped earn the project LEED® Gold certification. Additional green features include reclaimed water and micro-irrigation systems for a 50 percent reduction in water consumption, ozone-safe heating and air conditioning systems, and recycled construction materials.

Case study 4: Buckman Direct Diversion Project, NM

Buckman Direct Diversion is a \$180.9m project to divert, treat, and distribute water from the Rio Grande river to the City of Santa Fe and Santa Fe County.

The project, completed in 2011, includes 11 miles of raw water pipeline, a new 15-million-gallon-per-day water treatment plant, and 15 miles of finished water pipelines, to collectively reduce reliance on over-taxed groundwater resources and meet future drinking water needs.

Delivery model

The Jacobs/Kiewit (Western Summit Constructors) Joint Venture design-build team was selected by the Buckman Direct Diversion Board to complete the project via a fixed price design-build contract.

The Buckman Diversion Board was created by the City of Santa Fe and Santa Fe County via a joint power agreement to oversee implementation and operation of the diversion project.

Sources of funding & financing

The project is completely funded by the public, which includes grants from the New Mexico Finance Authority (NMFA) and the New Mexico Economic Development Department, a 2% interest loan from the NMFA, and a small grant from the US Bureau of Reclamation. The City of Santa Fe is using two sources to fulfill its funding commitment: a quarter cent capital outlay gross receipts tax and municipal bonds backed by a scheduled set of increases in water rates and charges. Since Santa Fe County does not yet have a customer rate base, the

County is meeting its commitment by reallocating capital outlay monies and through a 0.0625% environmental gross receipts tax in the unincorporated area.

Key challenges & success factors

Permitting: Resolving permitting challenges were key concerns due to the sensitive location of the river intake and crossing of multiple jurisdictions for the pipeline alignments. Returning sediment to the river required a National Pollutant Discharge Elimination System permit, while pipeline routes required right of ways permits from Bureau of Land Management property.

Environment: There are several endangered species of trees and birds in the region and the project has to re-route a pipeline to avoid a nesting site for burrowing owls and halting construction near the Rio Grande during the mating/migration season.

Case study 5: Thames Tideway Tunnel, UK

The \$6.6b Thames Tideway Tunnel (TTT) is a ~16-mile sewer pipeline that will run up to ~213 feet below the River Thames and aims to redirect the approximately 10 billion gallons of untreated sewage and storm water that is currently discharged into the River Thames in a typical year. Construction began in 2016 and is expected to reach completion by 2023. The project is also the first major infrastructure project in the UK privatized water sector that has a mix of both private financing and public financing from the UK central government.

Delivery model

An infrastructure consortium special purpose vehicle (SPV) was selected via competitive tender to finance, operate and maintain the project, as well as coordinate construction. This SPV is effectively acting as a regulated investor-owned utility.

Separate competitions were run to select companies to develop and construct the TTT — given the scale of the project, the construction work was split into three parcels (west, central and east), with each broadly reflecting different depths and ground conditions over the course of the tunnel.

Sources of funding & financing

The SPV investor consortium committed almost \$2b of shareholder equity upfront and negotiated a senior debt revolving credit facility from a six-bank group, which received a Baa1 (Moody's) rating. It also sought an inflation-indexed loan from the European Investment Bank (EIB) and has since issued a number of green bonds. Project debt service and operating costs will be met by an additional charge to Thames Water customer, being, the large private utility company responsible for the public water supply and waste water treatment in most of Greater London.

Key challenges & success factors

More detailed planning and target pricing: To enhance confidence over the financial envelope, the project sponsor developed detailed planning and cost estimations prior to selecting contractors. It also selected companies based on “target price” contracts rather than fixed price turnkey (to avoid unduly high contingencies for a project of such scale and complexity) – under this structure the contractor shares a proportion of any underspend/overrun with the SPV financing the project.

Splitting construction into parcels: This increased the number of companies that could realistically bid for any single parcel, which may have also put downward pressure on pricing through increased competition. Further, to give contractors incentives to work together to ensure the overall project succeeds, all construction contractors share in a £1.6b bonus pool if the whole TTT is delivered early or below the target price.

Government financing support: Although fully privately financed, the UK government developed a “Government Support Package” (GSP) during the financing competition whereby it agreed to take on certain risks until the TTT has been delivered, subject to certain conditions. It is the central mechanism the UK government has used to protect private parties from responsibility for difficult-to-quantify, high-impact low-probability risks and uncertainties, and place downward pressure on price. As a result, the private financing competition for the SPV was one of the last steps in setting up the TTT project and the winning weighted average cost of capital bid had a 2.5% real rate of return

Case study 6: Wentworth to Broken Hill Pipeline, Australia

The ~\$500m Wentworth to Broken Hill Pipeline is a major piece of public infrastructure supplying up to 10 million gallons of raw water per day via a 168-mile pipeline from the River Murray near Wentworth to Broken Hill in New South Wales, to address significant water shortages in the area. The project was completed in 2019.

Delivery model

The development of the WBH Pipeline was procured by WaterNSW using the design-build-operate-maintain (DBOM) procurement model. The selected John Holland/MPC Group Joint Venture is responsible for the design, construction, and the first 20 years of operation and maintenance of the project, while the public agency is responsible for financing the project.

Sources of funding & financing

The project was completely funded by the public agency. The New South Wales Government set aside \$500M in 2015 from the sale of electricity infrastructure to fund this project.

Key challenges & success factors

Project acceleration requirements: In selecting a private partner, delivery was assessed with regard to a bidder's resources to build the pipeline in a very time-constrained window set by Ministerial Direction. The commercial solution criterion related to the wrap of the D&C Contract and O&M Contract under the DBOM procurement model, including the ‘cleanness’ of the contractual relationships with WaterNSW. The selected contractor was able to construct and deliver the biggest water pipeline in Australia's recent history in a record time of just 12 months.

Post completion challenges: As the project completed in 2019, challenges from the Natural Resources Commission regarding unfair water-sharing rules that underpinned the project business case from 2016 were raised and called for an overhaul of such rules.

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Other funding program examples

State funding program for neighboring states (South Dakota, Minnesota, Montana)

The neighboring states South Dakota, Minnesota, Montana have mostly been using traditional public finance approach to fund water projects. These states have mostly relied on federal and state appropriations and bonding to provide funds to water projects in the format of either direct contribution or low interest loans.

- **South Dakota:** uses mainly federal and state appropriations to issues low interest loans to water projects. It has mainly 3 funding programs: Drinking Water Fund, Sanitary and Storm Sewer Project Fund, and Watershed Restoration Project Fund. Projects requesting funding must be on the State Water Plan.
- **Minnesota:** uses mainly federal and state appropriations, as well as the issuance of GO bonds to provide direct grants and low interest loans to water projects. Minnesota also has a Credit Enhancement Program that helps local municipalities reduce the costs of borrowing by using a state credit backing.
- **Montana:** uses mainly federal and state appropriation, as well as the issuance of GO bonds to provide direct grants and low interest loans to water projects. Key programs include Treasure State Endowment Program, Community Development Block Grant, Department of Natural Resources & Conservation water grants, State Revolving Fund etc.

Lewis & Clark Regional Water System: Tristate drinking water system in South Dakota, Iowa and Minnesota

Lewis & Clark will eventually be a wholesale water provider to 20 member cities and rural water systems in southeast South Dakota, northwest Iowa and southwest Minnesota. A combination of federal (~80%), state (~10%), and local (~10%) grants are being used for funding construction. One exception to this funding breakdown is the City of Sioux Falls' requirement to contribute 50% of the incremental cost of capacity for their need from the project.

- **Federal funding:** The Lewis & Clark Rural Water System Act became law in July 2000. It authorized federal grant in the amount of \$213.9M in FY93 dollars. Indexed for inflation, the approved funding ceiling at the time of authorization was \$270M. Each year the Bureau of Reclamation indexes the remaining federal funding ceiling for inflation and other factors. Through FY16 the federal government has appropriated \$239M in nominal terms to the project.
- **State funding:** South Dakota, Iowa and Minnesota states prepaid 100% of their original cost share many years in advance — South Dakota \$31.88M, Iowa \$7.01M and Minnesota \$5.45M - a combined \$44.34M. Due to the slow pace of federal funding, Lewis & Clark also turned to the states for "federal funding advances" to keep construction moving forward. These are zero interest unsecured loans to be repaid with federal funding after the 20 members are connected. To date, a total of \$55M has been advanced from the three states.
- **Local funding:** The 20 local members prepaid 100% of their cost share many years in advance. Members who requested additional capacity after Lewis & Clark was authorized also paid 100% of the incremental cost to upsize the system. The combined total paid by the members is \$109M.

Groundbreaking for Lewis & Clark was held on August 21, 2003. Construction is currently ~82% complete. Construction oversight is provided by the Bureau of Reclamation.

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Texas: State financial assistance programs

In Texas, local governments have traditionally provided the majority of the financing for water projects through municipal bond and less frequently with cash or private financing. Water projects have also historically relied heavily on federal assistance, but such federal assistance has declined considerably in recent years.

The state's financial assistance programs are administered by Texas Water Development Board (TWDB). These programs use proceeds from state general obligation (GO) bonds or revenue bonds to offer low interest loans to water projects. TWDB also uses separate programs dedicating to projects in the State Water Plan, and projects that are not.

- **State Water Implementation Fund for Texas (SWIFT):** Texas legislature combined multiple loan and grant programs and created the SWIFT to prioritize funding for large regional projects in the State Water Plan. The program also prioritizes projects based on a uniform standard such as how many people will be served by the project, whether the project will serve a diverse urban and rural population, whether the project provides regionalization, the percentage of water supply needs met by the project within the first decade, whether the project addresses an emergency need, the impact on conservation, and the priority ranking assigned to the project by the applicable Regional Water Planning Group etc. The program helps communities develop cost-effective water supplies by providing low-interest loans, extended repayment terms, deferral of loan repayments, and incremental repurchase terms. Through 2016, SWIFT committed over \$4.6B for water projects across Texas.
- **State Participation Program:** The program is limited to funding the excess capacity of a regional project when the local sponsors are unable to assume debt for the optimally sized facility, thus allowing for the “right sizing” of projects to accommodate future growth. The TWDB assumes a temporary ownership interest, and the local sponsor repurchases the TWDB's interest in the project as the growth is realized and additional customers connect to the system. To support the program, the TWDB issues GO bonds.
- TWDB also has several other programs that are dedicated to projects that are not in the State Water Plan, such as Texas Water Development Fund, Rural Water Assistance Fund, Agricultural Water Conservation Program, Economically Distressed Areas Program etc., as well as some federally funded programs such as Clean Water State Revolving Fund and Drinking Water State Revolving Fund.

Texas: Tarrant Regional Water District (TRWD) Integrated Pipeline (IPL) Project

TRWD and the City of Dallas Water Utilities (DWU) have partnered to design, construct, finance and operate the \$2.3B IPL Project. The IPL Project is an integrated water transmission system connecting Lake Palestine in the Dallas region to 2 lakes in the TRWD region, integrating all 3 lakes and TRWD's existing pipelines to supply water to customers in both City of Dallas and TRWD. The IPL consists of 150 miles of pipeline, several pump stations and supporting facilities, delivering ~ 350 million gallons per day of raw water to both districts.

The project has been broken down to 11 pipeline segments, 4 pump stations, and 4 supporting facilities, with each segment being ~\$100M. Projects have been funded and constructed segment by segment. Since Lake Palestine is located further east than TRWD reservoirs, DWU is paying the additional cost to make that connection. The cost of other sections will be shared by DWU and TRWD. And the final locations where the water begins its solo journey into Dallas or Tarrant County, will be the responsibility of the agency receiving the water. The cooperation saves roughly \$1B by avoiding two agencies building separate lines. Each agency shares ~50% of the cost.

TRWD issues all bonds for the project including Dallas' portion, and secured by the water revenues in both TRWD and DWU region. TRWD has issued ~\$1.3B bonds through 2016 (TRWD share \$818M, Dallas share \$508M). Roughly half of the segments have been completed to date.

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North Carolina: State funding programs

North Carolina, similar to other states, has traditional funding methods for water projects such as federal and state appropriations and bonding. However, it has two unique approaches that are worth highlighting:

- **Combining multiple loan funds into comprehensive program to increase collective impact:** In 2013, the State of North Carolina combined their Drinking Water SRF, Clean water SRF, and Community Development Block Grant infrastructure programs into one division for a more streamlined and effectively prioritized funding approach. The objects were to make limited dollars go further and to encourage comprehensive planning at the community level. The same year, the State Water Infrastructure Authority was created as an independent body with primary responsibility for awarding both federal and state funding for water and wastewater projects.
- **Incentivize stronger management standards through grant/loan awards:** States can incentivize management best practices by making grant and loan funding contingent on having best practices in place. In the SRF program today, funding eligibility is contingent on preparing a plan of financial viability, including managing utility accounts in accordance with accepted accounting procedures. However, this SRF requirement often is not enforced, and funding often is provided to systems without a viable financial plan. These accounting requirements should be enforced, and this information should be made available for public review. Specific grant programs also can be used to incentivize management best practices. For example, NC Department of Environmental Quality provides grants for utilities to inventory their existing systems, document the condition of the inventoried infrastructure, and take the next steps to define and prioritize critical projects.

Other innovative funding approach examples:

- **State of Washington:** Similar to NC, Washington also has this combined funding program (Water Quality Combined Funding program) that uses a single annual application process for funding from multiple sources at once. Clean Water Act Section 319 federal grants, Centennial Clean Water Program grants, Clean Water State Revolving Fund loans, Stormwater Financial Assistance Program grants have been all combined into one single Water Quality Combined Funding Program.
- **City of Atlanta:** Adopted a one-cent municipal option sales tax (MOST), which allows visitors and business people who use the city's water and sewer infrastructure, but do not pay city water/sewer bills, to help pay for upgrading and maintaining the infrastructure. Since it was implemented in 2004, the MOST has raised more than \$1 billion to help fund the city's water infrastructure needs.
- **City and County of Honolulu:** In designing utility rates and charges, it is important to understand the customer base and ensure full cost recovery from users who access the utility system. For example, acknowledging the large tourist population that uses its wastewater infrastructure, the City and County of Honolulu modified its non-residential customer class, which applies to hotels, to include a fixed rate reflecting full occupancy capacity needs in addition to charges based on water use.



Section D

Delivery Option Evaluation

D. Delivery Option Evaluation

An evaluation analysis was developed to identify delivery models that have the potential to meet the State's objectives for effective project implementation. This section uses that analysis to evaluate the delivery options identified and described in the previous sections of the Primer against a range of criteria agreed with the NDSWC. These criteria are considered the key drivers of the appropriateness and attractiveness of different delivery models to implement regional water supply projects in North Dakota. This evaluation does not to identify a single delivery model or the most relevant or attractive delivery model for a specific project, but rather identifies delivery models that have the **potential** to meet the State's objectives for effective project implementation. Any delivery model with the appropriate potential should be considered for current and future potential projects in development. Equally, the analysis identifies delivery models that are unlikely to meet the State's objectives. Delivery models that are unlikely to meet the State's objectives should generally be disregarded in any future conversations on project implementation.

Delivery models evaluated. The following delivery models were included in the analysis, ranging from traditional delivery models to models that have yet to be tried in the State (and that may require some legislative updates):

1. Traditional delivery

- Design-bid-build (DBB) / Construction manager as agent (CMa)
- General contracting/Construction manager at risk (GC/CMAR)

2. Alternative delivery

- Design-build (DB)
- Progressive DB
- Design-build-finance (DBF)
- Design-build-operate/maintain (DBO/DBM/DBOM)

3. Public-Private-Partnerships

- DBFOM/BOT/BOOT - Revenue risk
- DBFOM/BOT/BOOT - Availability Payment

Evaluation criteria applied. Evaluation criteria was then applied to each of the delivery models identified. These criteria were reviewed and discussed with the SWC representatives and staff for overall appropriateness:

1. **Legal permissibility/ sponsor authority:** The likelihood the public agency has direct legal authority to use the delivery model.
2. **Design & construction schedule:** The level of risk that can be transferred to the developer for delivering the project against a specified schedule, thereby increasing the certainty for the public sponsor around project timing.
3. **Design & construction cost:** The level of risk that can be transferred to the developer for delivering the project against a specified cost (whether fixed sum or some other arrangement), thereby increasing the certainty of the project financial envelope for the public sponsor.
4. **Operations period cost and performance:** The level of operating and maintenance risk transferred to the developer that provides the public sponsor with greater O&M period performance and cost certainty.

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5. **Interface risk between phases:** The extent to which the public sponsor's contracting partner is responsible for delivering multiple phases (design, construction, operation and maintenance) and the extent to which asset-life design principles (and associated efficiencies and/or performance drivers) can be utilized.
6. **Project pricing efficiency:** The likelihood that contractor pricing will reflect asset life costing efficiencies (i.e., the balance of price premiums and contingencies that reflect the level of risk transfer, with the potential for efficiencies from the integration of construction price considerations in design decisions, and the wider concept of asset life pricing in longer-term contracting models).
7. **Potential to accelerate delivery and completion:** The likelihood that the delivery model can address potential barriers that might otherwise impede ability to deliver the project on the most efficient schedule.
8. **Ease of transaction implementation / procurement:** The ease and timeliness for the public sponsor of implementing the project (and in particular selecting contracting partners) in the context of public sponsor existing resources and capabilities.
9. **Access to alternative capital:** The extent to which the delivery model provides flexibility and access to alternative (non public-sector) funding or financing sources.

Key observations and takeaways

The matrix on the following page summarizes the ratings of each delivery model(s) by criteria on a traffic light basis, whereby green, yellow, and red indicates that the model meets the criteria above to a high, medium, and low degree, respectively. The rationale for these ratings is set out in the tables that follow. Observation of the results indicate the following takeaways:

- No delivery models rate so poorly across the criteria that they warrant being discarded from further consideration for delivery of water supply projects in North Dakota.
- Structures categorized as alternative delivery are not currently legally permissible in North Dakota, which represents a significant barrier to their implementation. However, high or medium ratings on a number of other categories indicate there may be merits in further exploring these in the context of specific existing or future projects to determine if there is a sufficiently strong case to seek a change in legal permissibility in general or by exception, and what this would involve.
- Non-traditional delivery is usually most appropriate where the additional upfront procurement and contracting complexity and/or incremental cost of alternative financing is outweighed by the value of innovation, construction efficiency and risk transfer relating to asset design, construction, operations and performance, resulting in net "value for money" (VfM). This therefore requires an assessment of the risks that can meaningfully be transferred in the context of specific projects.
- Transferred interface risk between project phases can also result in pricing efficiencies — while typically attracting some kind of risk transfer price premium and a potential higher cost of capital, this can be more than offset by whole life asset pricing efficiencies. Traditional delivery pricing, meanwhile, can be more transparent and cost-reflective (and is often on an open-book basis), but offers limited cost control incentives or opportunity for integration-based efficiencies.
- Some delivery models score better than others on the ability to transfer operations period cost and performance, and the relative importance of this will likely be project-specific depending on the nature of the asset and anticipated operating risks. Other factors, as the need or level of interest in some element of private financing, may also influence the approach to O&M contracting, since there is no real basis for long-term private capital without a delivery model that includes operations performance contracting, over which period such financing can be repaid.

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- A number of the alternative and P3 delivery models evaluated include some element of private financing, which can help to remove capital constraints to facilitate project acceleration and/or allow private debt repayment over the longer-term, which can improve overall affordability.
- One of the key drawbacks of alternative and P3 delivery for water projects is that they can be more complex and time consuming to implement than traditional delivery that involves multiple but typically more straight forward procurements. While the ability of the SWC to implement such unfamiliar transactions structures may be a consideration in the context of existing resources and capabilities, a programmatic approach (also building on existing P3 experiences in North Dakota such as the Fargo-Moorhead Flood Diversion Project) offers greater potential to build a skills base within the organization.

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Evaluation criteria	Legal permissibility / sponsor authority	Level of potential risk transfer				Project pricing efficiency	Potential to accelerate delivery & completion	Ease of transaction implementation / procurement	Access to alternative capital
		Design & construction schedule	Design & construction cost	Operations period cost & performance	Interface risk between phases				
Delivery models (consistent with primer)	1	2	3	4	5	6	7	8	9
Traditional delivery									
Design-bid-build (DBB) / Construction manager as agent (CMa)	●	●	●	●	●	●	●	●	●
General contracting/Construction manager at risk (GC/CMAR)	●	●	●	●	●	●	●	●	●
Alternative delivery									
Design-build (DB)	●	●	●	●	●	●	●	●	●
Progressive DB	●	●	●	●	●	●	●	●	●
Design-build-finance (DBF)	●	●	●	●	●	●	●	●	●
Design-build-operate/maintain (DBO/DBM/DBOM)	●	●	●	●	●	●	●	●	●
Public-Private-Partnerships									
DBFOM/ BOT/BOOT - Revenue risk	●	●	●	●	●	●	●	●	●
DBFOM / BOT/BOOT - Availability Payment	●	●	●	●	●	●	●	●	●

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CRITERIA 1: Legal permissibility / sponsor authority The likelihood the public agency has direct legal authority to use the delivery model. These ratings are based on the Ohnstad-Twitchell analysis performed as part of the overall project.

Delivery model	Assessment summary	Rating
Traditional delivery		
DBB / CMa	▪ This model is legally permissible and has precedent in North Dakota	●
GC/CMAR	▪ This model is legally permissible and has precedent in North Dakota	●
Alternative delivery		
DB	▪ This model is not currently legally permissible in North Dakota	●
Progressive DB	▪ This model is not currently legally permissible in North Dakota	●
DBF	▪ This model is not currently legally permissible in North Dakota	●
DBO/DBM/DBOM	▪ This model is not currently legally permissible in North Dakota	●
P3		
DBFOM/BOT/BOOT - Revenue risk	▪ This model is legally permissible and has precedent in North Dakota	●
DBFOM/BOT/BOOT – Av. Payment	▪ This model is legally permissible and has precedent in North Dakota	●

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CRITERIA 2: Design & construction schedule risk transfer. The level of risk that can be transferred to the developer for delivering the project against a specified schedule, thereby increasing the certainty for the public sponsor around project timing.

Delivery model	Assessment summary	Rating
Traditional delivery		
DBB / CMa	<ul style="list-style-type: none"> The designer, construction contractor and/or construction manager may individually provide an indicative or target schedule for relevant phase, but no party is contractually obligated or held to a pre-agreed schedule for project completion. The Project Owner retains design & construction (DC) schedule risk. 	●
GC/CMAR	<ul style="list-style-type: none"> Similar to DBB/CMa — neither the general contractor or construction manager will guarantee a pre-agreed schedule for project completion. The Project Owner retains overall DC schedule risk. 	●
Alternative delivery		
DB	<ul style="list-style-type: none"> The DB contractor is typically committed to a pre-agreed project completion schedule, subject to certain conditions being met, such that DC schedule risk is substantially transferred to the contractor. 	●
Progressive DB	<ul style="list-style-type: none"> As in the case of DB the Progressive DB contractor is typically committed to a pre-agreed project completion schedule once the project scope is sufficiently determined and agreed, though the Project Owner may take schedule risk associated with the initial collaborative scoping and design development. 	●
DBF	<ul style="list-style-type: none"> The DBF contractor is typically committed to a pre-agreed project completion schedule, so that the DC schedule risk is transferred to the contractor on a basis consistent with the DB model, above. 	●
DBO/DBM/DBOM	<ul style="list-style-type: none"> The DBO/M contractor is typically committed to a pre-agreed completion schedule, so that the DC schedule risk is transferred to the contractor on a basis consistent with the DB model, above. 	●
P3		
DBFOM/BOT/BOOT - Revenue risk	<ul style="list-style-type: none"> The P3 contractor typically relies on a fixed price DB / turnkey construction contract, supported by appropriate guarantees, so that the DC schedule risk is substantially transferred to the P3 contractor. 	●
DBFOM/BOT/BOOT – Av. Payment	<ul style="list-style-type: none"> As above 	●

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CRITERIA 3: Design & construction cost risk transfer. The level of risk that can be transferred to the developer for delivering the project against a specified cost (whether fixed sum or some other arrangement), thereby increasing the certainty of the project financial envelope for the public sponsor.

Delivery model	Assessment summary	Rating
Traditional delivery		
DBB / CMa	<ul style="list-style-type: none"> The designer, construction contractors and/or construction manager may individually provide an indicative or target budget for relevant phase, but interface risk between designer and (potentially multiple) constructors and the practice of requesting and granting of change orders to recover incremental costs means that in practice a pre-agreed cost for project completion offers limited comfort. Project costs are typically captured on an open-book basis that reflects actual costs incurred (provided sufficiently evidenced), and therefore Project owner effectively retains DC cost risk 	●
GC/CMAR	<ul style="list-style-type: none"> The CMAR typically provides a guaranteed maximum price (GMP) for project construction once the design is sufficiently developed. The overall DC cost is therefore unknown at the project outset and Project Owner retains initial design cost risk, but construction cost risk is then largely transferred to the CMAR 	●
Alternative delivery		
DB	<ul style="list-style-type: none"> The DB contractor is typically committed to a pre-agreed fixed cost for project completion subject to certain conditions being met, so that the DC cost risk is substantially transferred to the DB contractor. 	●
Progressive DB	<ul style="list-style-type: none"> Similar to CMAR, the Progressive DB contractor typically provides a GMP or fixed construction cost once the project scope and design is sufficiently developed. As such the project cost is unknown at the outset and Project Owner takes initial design cost risk, albeit there are usually off-ramps if the GMP or fixed price submitted by DB partner is outside Project Owner's anticipated financial envelope for the project 	●
DBF	<ul style="list-style-type: none"> As DB 	●
DBO/DBM/DBOM	<ul style="list-style-type: none"> As DB 	●
P3		
DBFOM/BOT/BOOT - Revenue risk	<ul style="list-style-type: none"> The P3 contractor typically relies on a fixed price DB / turnkey construction contract, supported by appropriate guarantees, so that the DC cost risk is substantially transferred to the P3 contractor. 	●
DBFOM/BOT/BOOT – Av. Payment	<ul style="list-style-type: none"> As above 	●

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- 10. CRITERIA 4: Operations period cost & performance risk transfer.** The level of operating and maintenance risk transferred to the developer that provides the public sponsor with greater O&M period performance and cost certainty.

Delivery model	Assessment summary	Rating
Traditional delivery		
DBB / CMa	<ul style="list-style-type: none"> Project Owner retains the operation period cost & performance risks. 	●
GC/CMAR	<ul style="list-style-type: none"> Project Owner retains the operation period cost & performance risks 	●
Alternative delivery		
DB	<ul style="list-style-type: none"> Project Owner retains the operation period cost & performance risks. 	●
Progressive DB	<ul style="list-style-type: none"> Project Owner retains the operation period cost & performance risks 	●
DBF	<ul style="list-style-type: none"> Project Owner retains the operation period cost & performance risks. 	●
DBO/DBM/DBOM	<ul style="list-style-type: none"> Operation period cost & performance risks are transferred to the DBO/M contractor through contractualized O&M performance standards (typically also linking payment and performance). Certain risks, such as changing legal and regulatory requirements and costs risks connected to electricity and potentially certain chemical prices are likely to be passed back to the Project Owner 	●
P3		
DBFOM/BOT/BOOT - Revenue risk	<ul style="list-style-type: none"> As DBOM, with performance incentives arguably reinforced as a result of the financing structure. 	●
DBFOM/BOT/BOOT – Av. Payment	<ul style="list-style-type: none"> As above 	●

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CRITERIA 5: Interface risk between phases. The extent to which the public sponsor's contracting partner is responsible for delivering multiple phases (design, construction, operation and maintenance) and the extent to which asset-life design principles (and associated efficiencies and/or performance drivers) can be utilized.

Delivery model	Assessment summary	Rating
Traditional delivery		
DBB / CMa	▪ Project Owner retains the interface risk between all phases of the project	●
GC/CMAR	▪ Project Owner retains the interface risk between all phases of the project	●
Alternative delivery		
DB	▪ Interface risk between design and construction phase transferred to the DB contractor, but owner retains interface risk between DB and O&M phase.	●
Progressive DB	▪ As above	●
DBF	▪ As above	●
DBO/DBM/DBOM	▪ Interface risk between all project phases managed by contractor, albeit noting that Project Owner retains responsibility for project financing and the incorporation of this into the contractor's delivery plan.	●
P3		
DBFOM/BOT/BOOT - Revenue risk	▪ Interface risk between all project phases managed by contractor	●
DBFOM/BOT/BOOT – Av. Payment	▪ As above	●

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CRITERIA 6: Project pricing efficiency. The likelihood that contractor pricing will reflect asset life costing efficiencies (i.e., the balance of price premiums and contingencies that reflect the level of risk transfer, with the potential for efficiencies from the integration of construction price considerations in design decisions, and the wider concept of asset life pricing in longer-term contracting models).

Delivery model	Assessment summary	Rating
Traditional delivery		
DBB / CMa	<ul style="list-style-type: none"> Project costs for the design and construction phases are (separately) recovered by the respective contractors on an open-book basis plus an agreed fee or profit margin — as such project pricing is typically transparent and reflective of actual delivery cost, and therefore relatively efficient in terms of the absence of risk premia and cost contingency. It is important to note, however, that incentives on cost control under the DBB structure (both from a design and construction perspective) by the private sector are relatively weak. 	●
GC/CMAR	<ul style="list-style-type: none"> Similar to DBB/CMa, pricing is typically on an open-book basis plus an agreed profit margin, which means project cost is relatively reflective of actual delivery cost, albeit pricing remains on a phase-by-phase basis with limited cost efficiency incentives. 	●
Alternative delivery		
DB	<ul style="list-style-type: none"> The DB contractor typically bids a fixed price that includes some level of price premium to reflect the interface risk it is taking on, and notably the uncertainty regarding total project cost (pending the completion of detailed design) when bid at the outset. However, unlike traditional delivery, design is formulated with price of delivery in mind, and so the integration of the two phases can improve cost efficiency overall, compared to discrete phase pricing. 	●
Progressive DB	<ul style="list-style-type: none"> Similar to DB, the contractor will typically build in a certain level of price risk premium, albeit likely less than under a pure fixed price DB given pricing commitments are typically made once the project scope and design is more developed and the contractor's cost estimates are therefore likely to be more accurate or reflective of actual project delivery needs 	●
DBF	<ul style="list-style-type: none"> As DB 	●
DBO/DBM/DBOM	<ul style="list-style-type: none"> Where the contractor is also taking on operations and/or maintenance performance responsibility and associated risks, the pricing will typically include a premium / profit margin reflective of the risk the contractor is taking on over the longer-term and the inherent uncertainty of future operating costs, as well as the initial DB cost. Certain costs connected to, for example, electricity and potentially certain chemical prices are likely to be passed back to the Project Owner to acknowledge risks outside of contractor's control. However, even more so than a DB, whole-life asset costing should yield a more financially efficient outcome than segregated DB + O&M contracting, since the contractor will design and construct in context of its anticipated operating model and vice versa, and be able to extract pricing efficiencies of doing so compared to more discrete transfer of responsibility by phase. 	●
P3		
DBFOM/BOT/BOOT - Revenue risk	<ul style="list-style-type: none"> Similar to DBO/M, pricing typically includes a higher premium to reflect the degree of risk transfer the P3 contractor is taking on but should also be able to realize efficiencies from asset-life costing. 	●
DBFOM/BOT/BOOT – Av. Payment	<ul style="list-style-type: none"> Similar to DBFOM, albeit an Availability Payment approach will more clearly draw out the differential cost of finance and equity return associated with the use of private finance (while noting some element of private finance can have a wider range of non-monetary benefits such as project acceleration or additional performance guarantee). Conversely, the revenue risk DBFOM may be expected to include a higher premium to reflect the degree of revenue risk transfer the P3 contractor is taking on, compared to guaranteed availability payments. 	●

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CRITERIA 7: Potential to accelerate delivery and completion. The likelihood that the delivery model can address potential barriers that might otherwise impede ability to deliver the project on the most efficient schedule.

Delivery model	Assessment summary	Rating
Traditional delivery		
DBB / CMa	<ul style="list-style-type: none"> Delivery timing is typically be constrained by (i) the resources of the Project Owner to procure and manage Contractors and deal with change orders, particularly in complex construction programs; and (ii) the availability of funding or financing to meet project costs as incurred. Traditional delivery typically does not offer any inherent ability to accelerate project delivery, and precedent project examples in North Dakota and the US more broadly indicate that traditional delivery may involve a more prolonged and less efficient timeline to project completion where these constraints exist 	●
GC/CMAR	<ul style="list-style-type: none"> Having a GC or CMAR entity involved in the project to help Project Owner structure and coordinate project delivery and third party participation can aid the timeliness and efficiency of project delivery, albeit the Project Sponsor will still typically be subject to its typical constraints.. 	●
Alternative delivery		
DB	<ul style="list-style-type: none"> Selecting a DB contractor through a single procurement and transferring the balance of cost, schedule and interface risks to that contractor can help to accelerate project development and delivery since the likelihood of material change orders is reduced. Further, the contractor will be incentivized to meet key milestones to trigger payment. While the management burden on the Project Owner is reduced as compared to traditional models, the availability of funding or financing to meet project costs as incurred may remain a constraint to schedule optimization. 	●
Progressive DB	<ul style="list-style-type: none"> As per DB. 	●
DBF	<ul style="list-style-type: none"> The use of private capital can address funding or financing constraints of the Project Owner , increasing the ability of the DB contractor to design and construct the project on the most efficient schedule. A DBF model typically involves short-term private financing solutions that requires repayment following construction completion, and as such the deliverability of the project will still depend on the Project Owner's ability to repay or refinance the private capital. 	●
DBO/DBM/DBOM	<ul style="list-style-type: none"> Similar to DB, albeit with the handover to O&M internalized within the contracting structure, which may allow for more efficient commissioning. 	●
P3		
DBFOM/BOT/BOOT - Revenue risk	<ul style="list-style-type: none"> P3s can bring long-term private capital to the project and provide the Project Owner with a single point of contact, and a clear contractual environment which provides clear financial remedy for delay and incentivizes timely performance. Together these typically remove the main obstacles to timely project delivery. Further, in a revenue risk structure, the P3 contractor is typically not constrained by the availability and timeliness of Project Owner payments, which such revenues coming from end users (subject to the creditworthiness of the project structure - see Criteria 8). 	●
DBFOM/BOT/BOOT – Av. Payment	<ul style="list-style-type: none"> As DBFOM above, but subject to the Project Owner being able to demonstrate its ability to draw on creditworthy revenue streams to meet its Availability Payment obligations. 	●

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CRITERIA 8: Ease of transaction implementation / procurement. The ease and timeliness for the public sponsor of implementing the project (and in particular selecting contracting partners) in the context of public sponsor existing resources and capabilities.

Delivery model	Assessment summary	Rating
Traditional delivery		
DBB / CMa	<ul style="list-style-type: none"> DBB/CMa are the most common delivery models for water infrastructure delivery in North Dakota and the US more broadly. Project Owners are reasonably familiar with the procurement and contracting processes used to implement projects on this basis and typically have well-established processes to do so. Although involving multiple procurements, each is for a discrete phase with relatively limited levels of risk transfer (per prior criteria commentary), and so typically does not require lengthy or complex negotiations. Given pricing is usually on an open-book basis, the need for extensive scrutiny of pricing proposals is also reduced. 	●
GC/CMAR	<ul style="list-style-type: none"> Similar to DBB/CMa 	●
Alternative delivery		
DB	<ul style="list-style-type: none"> A single process to procure both design and build services from a single contractor brings certain transaction efficiencies, although can also be more complex and time consuming since the Project Owner needs to evaluate and compare bids on both a technical and price basis. The contracting process also involves identifying, negotiating and memorializing more performance-related provisions given the increased transfer of interface risks to the DB contractor. However, a DB arrangement is still a relatively short term contracting commitment for the Project Owner 	●
Progressive DB	<ul style="list-style-type: none"> The initial procurement phase, which unlike a pure DB is typically qualifications based, can be relatively straight forward and more akin to traditional delivery, to engage a partner that the Project Owner can collaborate with initially to progress project scope and design. Thereafter, the Project Owner will then need to decide whether to subsequently enter into a contractual commitment for the selected partner to deliver the DB services, which will involve many of the considerations and complexities identified above in terms of contract negotiation, albeit will not require evaluation and comparison of multiple technical and pricing proposals unless the Project Owner decides to retender the project at that point. However, the Owner will need to separately evaluate the O&M consequences post construction and preferred contracting structure, term and compensation model. 	●
DBF	<ul style="list-style-type: none"> Similar to DB. The net impact of the contractor taking on financing risk is likely project-specific depending on the complexity of the deal and the Project Owner's alternative funding options. Private finance reduces the initial administrative and transaction burden on the Project Owner of sourcing capital for the project, but it will still need to understand the financing structure and the refinancing / repayment obligation this entails. Equally, the evaluation of bid deliverability as compared to DB will be more complex with the inclusion of financing, and the process will need to accommodate lender diligence and financing documentation development. Owner will also need to evaluate the operating period consequences outside of the DBF project and the compatibility of O&M contracting preferences or alternatives with the proposed technical solutions. . 	●
DBO/DBM/DBOM	<ul style="list-style-type: none"> DBO/DBM typically involves a more complex procurement process than DB alone because Project Owner is evaluating multiple bidders' ability and proposed approach to long-term O&M management as well as upfront design and construction, and the associated pricing. Bidders also need sufficient time to develop a whole asset-life technical solution. The contracting process can also be more complex as it requires additional focus on long-term performance provisions, and associated payment mechanisms. In general, the process to select and contract with a single partner for a 	●

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	30/40/50 year period will be more complex and Project Owners are typically less familiar with the additional considerations and processes of entering into these long-term contracts. However, the internalization and pricing of the operations function within the bid can be a big advantage from the perspective of comparing bids against each other.	
P3		
DBFOM/ BOT/BOOT - Revenue risk	<ul style="list-style-type: none"> ▪ Similar to DBOM, the main difference being the complexity introduced by private financing, including the time and process to complete lender due diligence, and the focus on bankability and credit risk in the project and financing agreements. 	●
DBFOM/BOT/BOOT – Av. Payment	<ul style="list-style-type: none"> ▪ As per DBFOM above, albeit potentially reduced time and resource required to focus on credit risk due diligence, assuming the relevant public sector counterparty is solid. 	●

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CRITERIA 9: Access to alternative capital. The extent to which the delivery model provides flexibility and access to alternative (non public-sector) funding or financing sources.

Delivery model	Assessment summary	Rating
Traditional delivery		
DBB / CMa	<ul style="list-style-type: none"> Traditional delivery doesn't provide access to private capital and the Project Owner retains responsibility for sourcing funding or financing, and any associated risks 	●
GC/CMAR	<ul style="list-style-type: none"> As above 	●
Alternative delivery		
DB	<ul style="list-style-type: none"> As above 	●
Progressive DB	<ul style="list-style-type: none"> As above. 	●
DBF	<ul style="list-style-type: none"> The DBF model brings in private construction financing, which can help to address near-term liquidity constraints or provide other benefits, though Project Owner typically needs to have a near-term repayment or refinancing plan 	●
DBO/DBM/DBOM	<ul style="list-style-type: none"> As DB 	●
P3		
DBFOM/ BOT/BOOT - Revenue risk	<ul style="list-style-type: none"> P3s bring long-term private capital for project design, construction, repaid over the operations and maintenance phase. The Project therefore benefits from access to additional sources of financing, with a competitive procurement process typically encouraging bidders to put forward the most competitive financing package they can secure. Access to capital is fundamentally dependent on the credit quality of the project, and the ability of the project revenue streams to support the repayment of financing to the satisfaction of the lenders and equity providers. 	●
DBFOM/BOT/BOOT – Av. Payment	<ul style="list-style-type: none"> As above, subject to the quality of the availability payment commitment from the Project Owner as the source of revenue relied on for repayment. 	●



Section E

Financing Option Evaluation

E. Financing Option Evaluation

Similar to the Delivery Option evaluation, a Financing Options evaluation was performed to expand the scope of potential financing solutions for both the State and the select regional projects in order to determine whether or not additional options may better fit the needs of both to tackle the overall project costs. The following section discusses potential financing options for water projects in North Dakota and the relative advantages and disadvantages of each financing option measured against a set of criteria agreed upon with the SWC. The funding and financing options evaluated reflect those sources identified and described in the Primer, albeit the table below sets out which sources are available to meet the State and Local User cost shares respectively, given most North Dakota regional water supply projects involve some degree of cost sharing.

Options available to State	Options available to Local users
• Federal appropriations	• Federal appropriations
• Federal agency grants	• Federal agency grants
• Federal agency loans	• Federal agency loans
• State appropriations / Resources Trust Fund (RTF)	• WIFIA loan program
• WIFIA loan program	• RTF - infrastructure revolving loan fund
• SWIFIA loan program	• State Revolving Fund (SRF) loan program
• MR&I Water Supply Program	• Bank of North Dakota (BND) Infrastructure Revolving Loan Fund
• State GO bond(s)	• Public Finance Authority (PFA) Capital Finance Program
• State revenue bond(s)	• ND Legacy Fund – loan
• ND Legacy Fund - grant	• Local cash reserves
• Private financing	• Local user revenues
• Private Activity Bonds (PABs)	• Local sales tax/ property tax/special assessments
• Tax-exempt debt via non-profit conduit	• Local GO bonds
• Lease financing	• Local revenue bonds
	• Private financing
	• Private Activity Bonds (PABs)
	• Tax-exempt debt via non-profit conduit
	• Lease financing
	• National Rural Water Association revolving loan fund

Evaluation criteria applied The evaluation criteria applied are detailed below. This preliminary evaluation of funding and financing options in the context of the agreed criteria is project agnostic, but it is acknowledged that certain sources are subject to project nuances in terms of legal or practical permissibility, and these are noted where relevant, albeit will be subject to further discussion as part of Task 3.

- 1. Legal permissibility/ sponsor authority:** The likelihood the public entity has sufficient direct legal or regulatory authority to use the funding or financing source.

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2. **Capacity to meet cost share:** The likely capacity of the funding / financing source to (by itself) materially contribute to the respective capital cost share requirements (absolute \$ terms) on an efficient construction schedule.
3. **Accessibility:** The likely ability of the relevant public entity to secure the relevant funds (i.e., the extent to which access to capital impacted by eligibility criteria, terms and conditions, inherent program risks, or competing priorities for the same funds).
4. **Timeliness:** The likelihood the funding/financing source will be available to deliver the project on the most efficient schedule.
5. **Low cost of capital:** The source of capital does not incur additional economic burden on the relevant public entity (i.e., the extent to which the capital needs to be repaid, and any associated financing costs such as interest or coupon rate)

Key observations and takeaways

The matrix on the following page summarizes the ratings of each financing option(s) on a State level by criteria on a traffic light basis, whereby green, yellow, and red indicates that the model meets the criteria above to a high, medium and low degree, respectively. The rationale for these ratings is set out in the tables that follow. The Local level matrix is found on page 59. Observation of the results for both indicate the following takeaways:

- The State's legal authority for new financing solutions generally rests on established programs unless legislative, and in some cases constitutional, action is taken.
- Locals have a broader set of options available to them and greater flexibility in accessing those options.
- Generally options ranking high in timeliness of financing does not align best with options ranking high in the legal authority, as a result, additional legal authority should be evaluated for those that provide greater timeliness (and flexibility) to locals.
- Leveraging existing methods for both the State and Local results in the highest ranking option for either parties with State appropriations / RTF highest for the State and the Capital Finance Program highest for the locals.
- While cost of capital is evaluated, none of them truly look at the affordability to any entity included within the discussion.

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Funding options evaluation matrix – from State perspective to meet State cost share

Evaluation criteria	1	2	3	4	5
	Legal permissibility/ sponsor authority	Capacity to meet cost share	Accessibility	Timeliness	Low cost of capital
Federal appropriations	●	●	●	●	●
Federal agency grants	●	●	●	●	●
Federal agency loans	●	●	●	●	●
State appropriations / RTF	●	●	●	●	●
WIFIA loan program	●	●	●	●	●
SWIFIA loan program	●	●	●	●	●
MR&I Water Supply Program	●	●	●	●	●
State GO bond(s)	●	●	●	●	●
State revenue bond(s)	●	●	●	●	●
ND Legacy Fund - grant	●	●	●	●	●
Private financing	●	●	●	●	●
Private Activity Bonds (PABs)	●	●	●	●	●
Tax-exempt debt via non-profit conduit	●	●	●	●	●
Lease financing	●	●	●	●	●

Rating (ability to meet criteria): High ● Medium ● Low ●

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The criteria presented below are from the State's perspective to meet the State cost-share. Local perspective is provided following the State perspective.

CRITERIA 1: Legal permissibility / sponsor authority The likelihood the public entity has sufficient direct legal or regulatory authority to use the funding or financing source. This evaluation is based on research provided by Ohnstad-Twitchell as part of the project.

Funding Options	Assessment summary	Rating
Federal appropriations	<ul style="list-style-type: none"> No material legal or regulatory barriers to State receiving federal appropriations³. 	●
Federal agency loans & grants	<ul style="list-style-type: none"> Although no legal or regulatory barriers, the majority of relevant federal agency loan and grant programs are targeted at non-state level user groups such as rural municipalities, small and disadvantaged communities, etc.¹ 	●
State appropriations / RTF	<ul style="list-style-type: none"> State of ND has the legal ability to receive State appropriations (typically awarded to and disbursed to projects via State Water Commission) 	●
WIFIA	<ul style="list-style-type: none"> Eligible borrowers include local, state, tribal, and federal government entities 	●
SWIFIA	<ul style="list-style-type: none"> State of ND has the legal ability to apply for and receive SWIFIA loans from EPA via the ND Public Finance Authority¹ 	●
MR&I Water Supply Program	<ul style="list-style-type: none"> Allocated to ND regional water supply projects and therefore inherently authorized as source of funds. 	●
GO bond(s)	<ul style="list-style-type: none"> The ND Century Code does not expressly authorize current water supply projects to issue GO bonds. Furthermore, Article X, Section 15 of the ND Constitution also limits the debt of political subdivisions to 5% of their assessed valuation, which effectively limits the ability for the projects to issue debt to a prohibitively low amount in the context of large water infrastructure projects.⁴ <i>[Internal DN – to confirm connection between project authority and state vs local borrower]</i> 	●
Revenue bond(s)	<ul style="list-style-type: none"> Most projects have express authority to issue revenue bonds pursuant the ND Century Code and to pledge any and all income, profits, and revenues received to secure the payment of bonds issue and sold to finance the project <i>[Internal DN – AE2S & OT feedback slightly contradictory – seems there is express authority and so rated as such, but AE2S note that limited based on ability to pledge traditional revenue sources to be reflected in subsequent criteria, subject to clarification on why this is. Also project vs state vs local as issuer]</i> 	●
ND Legacy Fund - grant	<ul style="list-style-type: none"> Projects are currently limited from obtaining grants or funds from the Legacy Fund because any withdrawals from the Legacy Fund's principal after June 30, 2017, require a two-thirds vote in both houses of the Legislative Assembly. However, currently proposed bonding bill legislation may open up authority to direct Legacy Fund earnings to meet State investment in water infrastructure projects. 	●
Private financing	<ul style="list-style-type: none"> No legal or regulatory barriers to State of ND leveraging private financing, subject to the accompanying delivery model (for example, private finance in a DBFOM structure would be permissible but DBF currently not allowed) 	●
PABs	<ul style="list-style-type: none"> PABS are issued by (or on behalf of) a local or state government on behalf of a private entity and so no legal restrictions on State of ND to leverage, albeit specific project and associated capital need must meet PABs eligibility criteria to be a qualified project and fall within allocation volumes (see subsequent criteria) 	●

continued

³ Exception - RRVWSP is the only project limited in its ability to obtain federal appropriations. Since RRVWSP is a State project and is trying to avoid federal cross-cutting permitting requirements, SWC is limited in its ability to obtain federal appropriations, loans, and grants

⁴ For example, the original plan to fund the SWPP with GO Bonds was found to be unconstitutional by the ND Supreme Court. See State ex rel. Lesmeister v. Olson, 354 N.W.2d 690 (N.D. 1984), where bonds to raise funds to construct SWPP were subject to constitutional debt limitations.

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Tax-exempt debt via non-profit conduit	<ul style="list-style-type: none">▪ There is no express statutory authority precluding the projects from using non-profit conduits for tax exempt financing	●
Lease financing	<ul style="list-style-type: none">▪ There is no express statutory authority precluding the projects from using lease financing	●

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CRITERIA 2: Capacity limit to meet cost share. The likely capacity of the funding / financing source to (by itself) materially contribute to the respective capital cost share requirements (absolute \$ terms) on an efficient construction schedule.

Funding Options	Assessment summary	Rating
Federal appropriations	<ul style="list-style-type: none"> There is limited precedent for current or recent direct federal appropriations to ND State water projects at scale. 	●
Federal agency loans & grants	<ul style="list-style-type: none"> Most federal grants and loans are either for a specific type of water project, are able only make up a small portion of the overall capital requirement, and/or usually target small or disadvantaged communities. 	●
State appropriations / RTF	<ul style="list-style-type: none"> State appropriations typically make up a major portion of state's cost share. In 2019-2021 biennium, the State has allocated ~\$225m to water projects. 	●
WIFIA	<ul style="list-style-type: none"> WIFIA can finance up to 49% of eligible project costs for water projects at least \$20m in size, with no specific maximum or cap on scale. To date, the program loan size has averaged around \$[250]m, but has exceeded \$500m in some cases. 	●
SWIFIA	<ul style="list-style-type: none"> SWIFIA can finance up to 49% of eligible project costs for water projects at least \$20m in size, with no specific maximum or cap on scale. The three loan applications to date ranged between \$39m and \$500m 	●
MR&I Water Supply Program	<ul style="list-style-type: none"> The \$800m funding authorized to date and allocated to specific projects represents a significant contribution to state share of project costs for those projects. With such allocations having already been made (though not necessarily spent), it is unclear whether additional funds will be available to meet ongoing state cost share, albeit precedent indicates funding at scale is possible. 	●
GO bond(s)	<ul style="list-style-type: none"> Extremely limited to due to constitutional debt limit of the State. 	●
Revenue bond(s)	<ul style="list-style-type: none"> Not subject to the constitutional debt limits and therefore theoretically scalable to meet cost share needs, albeit subject to the source and volume of revenue that can be pledged for repayment. [Internal DN: AE2S note that limited based on ability to pledge traditional revenue sources (what would the repayment source be?)- grateful for more clarification on this and whether it's a volume/capacity barrier or an access barrier under Criteria 3] 	●
ND Legacy Fund - grant	<ul style="list-style-type: none"> The Legacy Fund could in theory provide sufficient funds to meet State cost share of one or more projects, subject to an evolution in legislative authority to access the fund. Although not more than 15% of the principal of the Legacy Fund may be expended during any biennium, the fund held a principal balance of around \$6.3b at 31 December 2020 and is expected to earn about \$500m in the next two-year budget cycle. This indicates that if/when the Legacy Fund becomes a potential source of infrastructure capital, it could be sufficient to meet project cost share needs, particularly if spread over multiple biennium (to avoid triggering 15% cap) 	●
Private financing	<ul style="list-style-type: none"> There are no caps to private financing and it is typically scalable to meet capital needs, subject to project credit quality 	●
PABs	<ul style="list-style-type: none"> Each state is subject to a federally-set annual PABs limit - the total annual PAB volume cap for ND is around \$300m, and with eligible water projects just one category within it (subject to its own volume cap, set at a state level [DN: Trying to source specific figures for ND]), the ability to meet the state's cost share will be constrained by these caps and in the context of other projects awarded PAB funding in any particular year. There is also limited precedent of PABs being used to fund water projects at scale in ND 	●
Tax-exempt debt via non-profit conduit	<ul style="list-style-type: none"> There are no caps to debt issuance by a tax-exempt conduit and it is typically scalable to meet capital needs 	●
Lease financing	<ul style="list-style-type: none"> There are no specific caps to lease financing volumes, typically raised via lease revenue bonds or certificates of participation 	●

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CRITERIA 3: Accessibility. The likely ability of the relevant public entity to secure the relevant funds (i.e., the extent to which access to capital impacted by eligibility criteria, terms and conditions, inherent program risks, or competing priorities for the same funds).

Funding Options	Assessment summary	Rating
Federal appropriations	<ul style="list-style-type: none"> Federal appropriations often have certain eligibility criteria, and applications are often subject to a long review/approval process. 	●
Federal agency loans & grants	<ul style="list-style-type: none"> Agency grants often have certain eligibility criteria, and applications are often subject to a formal review/approval process. 	●
State appropriations / RTF	<ul style="list-style-type: none"> While State appropriations applications can in general be onerous and involve competing with other state budgetary priorities, appropriations requests that can be met through RTF funding (i.e., forming the majority of the SWC budget) typically have lower access risks given the fund is already dedicated to construction of water infrastructure projects, and the SWC has reasonable discretion on the allocation of such funds. 	●
WIFIA	<ul style="list-style-type: none"> The EPA has certain eligibility criteria for WIFIA, and applications are subject to a formal review/approval process. Further, North Dakota projects would be competing with other US water projects to secure an application invitation. 	●
SWIFIA	<ul style="list-style-type: none"> Similar to WIFIA, the EPA has certain eligibility criteria for SWIFIA, and applications are subject to a formal review/approval process. While as per WIFIA, North Dakota's PFA would be competing with projects across the US, there may be less competition under this new program initially compared to the increasingly mainstream WIFIA program, which has a broader pool of potentially eligible borrowers. 	●
MR&I Water Supply Program	<ul style="list-style-type: none"> Access is subject to existing authorized allocations and so reasonably low risk for projects already named as beneficiaries, though any additional funding will require US Congressional appropriation, which would presumably require competing with other state and federal budgetary priorities 	●
GO bond(s)	<ul style="list-style-type: none"> Water projects would be competing with all other State projects seeking GO bond proceeds, a barrier that is further compounded by the State's extremely low constitutional debt limit 	●
Revenue bond(s)	<ul style="list-style-type: none"> No specific access risks assuming there is sufficient relevant pledged revenues, but there is limited precedent for revenue bonds for water infrastructure projects at a state level and availability generally considered limited based on the ability to pledge traditional revenue sources. 	●
ND Legacy Fund - grant	<ul style="list-style-type: none"> Any applications for Legacy Fund capital (if/when authorized) would be competing with a potentially wide range of projects since the primary purpose and beneficiaries of the fund are yet to be determined, and require a vote of at least two-thirds of the members elected to each house of the legislative assembly. However, critical infrastructure projects have been mooted by some legislators as a likely key focus of the fund, which may benefit regional water supply projects. 	●
Private financing	<ul style="list-style-type: none"> While private financing is subject to lender due diligence and credit committee approvals, which requires the project to be sufficiently bankable, there are few inherent access risks beyond this 	●
PABs	<ul style="list-style-type: none"> Access to PABs required projects to meet various eligibility criteria and tests and compete with other projects subject to the relevant volume caps. 	●
Tax-exempt debt via non-profit conduit	<ul style="list-style-type: none"> While in theory access risks are low provided a suitable non-profit conduit can be identified and a suitable financing package established, it remains a relatively untested structure for large-scale/capital intensive infrastructure projects — and water in particular — having mainly been used for smaller-scale social infrastructure or real estate projects to date. 	●

Continued

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Lease financing	<ul style="list-style-type: none">While in theory access risks are low provided a suitable transaction structure and financing package can be developed with the lessor, in ND, there is limited precedent for use of lease financing to fund water projects. Water supply projects in particular may be unsuitable as the nature of the assets do not facilitate a traditional lessee/lessor relationship whereby one party would transfer equipment for period rent payments.	
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CRITERIA 4: Timeliness. The likelihood the funding/financing source will be available to deliver the project on the most efficient schedule.

Funding Options	Assessment summary	Rating
Federal appropriations	<ul style="list-style-type: none"> Federal appropriations are subject to annual federal budgeting process and so the availability each year may be inconsistent, introducing potentially significant timing and planning risk for large-scale water infrastructure projects that require multi-year capital investments 	●
Federal agency loans & grants	<ul style="list-style-type: none"> Federal agency grants and loans are subject to application processes that may impact the timing of receiving funds if successful. There may also be uncertainty year-to-year as to the volume of funds available for specific programs, which could impact ability to rely on such sources during initial capital planning. However, timing risks will be highly dependent on the specific program. 	●
State appropriations / RTF	<ul style="list-style-type: none"> State appropriations are subject to annual state budgeting process and so the availability each year may be inconsistent, introducing potentially significant timing and planning risk for large-scale water infrastructure projects that require multi-year capital investments. 	●
WIFIA	<ul style="list-style-type: none"> The WIFIA program is subject to application windows that need to be factored into the timing of the project planning and timing of capital need. There is at least one application window per year. The end-to-end application process varies by project but is typically in the range 9-12 months. However, if approved, a project should be able to draw on the loan as needed to meet eligible project costs. 	●
SWIFIA	<ul style="list-style-type: none"> Similar considerations as WIFIA. It is noted that the SWIFIA program is still in its first round, having received three letters of interest in September 2020, and so the timing from application to close is not yet known, but is expected to be similar to WIFIA. 	●
MR&I Water Supply Program	<ul style="list-style-type: none"> For funding already authorized and allocated, it should be possible to draw the funds as needed. However, additional MR&I funding is dependent upon US Congressional appropriations, which introduces potentially significant timing risk and uncertainty. 	●
GO bond(s)	<ul style="list-style-type: none"> Where a GO bond is issued, the State has a large degree of control over timing (subject to preparation of relevant representations and documents) and the proceeds can typically be allocated to the relevant recipient in one go, resulting in limited timing risk 	●
Revenue bond(s)	<ul style="list-style-type: none"> Subject to preparation of relevant documentation underpinned by robust revenue pledges, the State has a large degree of control over timing of bond issue and the proceeds can typically be allocated to the relevant recipient, resulting in limited timing risk 	●
ND Legacy Fund - grant	<ul style="list-style-type: none"> Limited precedent and lack of formal application and approvals process makes timing to secure funds and ability to meet capital costs as needed uncertain at this time 	●
Private financing	<ul style="list-style-type: none"> Subject to a well-structured and bankable financing package private financing can typically be raised to accommodate a project's capital needs in a timely manner. 	●
PABs	<ul style="list-style-type: none"> Subject to an application process that need to be factored into the timing of the project planning and timing of capital need. However, if approved, the loan should be available to draw as needed by the project. 	●
Tax-exempt debt via non-profit conduit	<ul style="list-style-type: none"> Subject to a well-structured and bankable bond package, issuance and allocation of proceeds can typically accommodate a project's capital needs in a timely manner 	●
Lease financing	<ul style="list-style-type: none"> Subject to a well-structured and bankable financing package, issuance and allocation of proceeds can typically accommodate a project's capital needs in a timely manner 	●

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CRITERIA 5: Low cost of capital. The source of capital does not incur additional economic burden on the relevant public entity (i.e., the extent to which the capital needs to be repaid, and any associated financing costs such as interest or coupon rate).

Funding Options	Assessment summary	Rating
Federal appropriations	<ul style="list-style-type: none"> No repayment requirement and zero cost of capital. 	●
Federal agency loans & grants	<ul style="list-style-type: none"> Federal agency grants don't require repayment and so have no cost of capital. Agency loans will typically have a repayment and interest component, though typically at a preferential rate 	●
State appropriations / RTF	<ul style="list-style-type: none"> No repayment requirement and zero cost of capital. 	●
WIFIA	<ul style="list-style-type: none"> WIFIA loan interest rates are similar to US Treasury rate (~2%), representing a relatively low cost of capital, and repayment terms are flexible (e.g., 5-year repayment grace period from substantial completion, and a maximum 35-year repayment term from first disbursement. 	●
SWIFIA	<ul style="list-style-type: none"> Same as WIFIA 	●
MR&I Water Supply Program	<ul style="list-style-type: none"> No repayment requirement and zero cost of capital. 	●
GO bond(s)	<ul style="list-style-type: none"> The State of ND's strong credit rating (ND has a GO bond rating of Aa1, 2nd highest on Moody's scale), results in a relatively low cost of capital on bond repayments 	●
Revenue bond(s)	<ul style="list-style-type: none"> Cost of capital on revenue bonds will be determined on a case-by-case basis. Since revenue bonds are only secured by specific project revenues, they are considered riskier than GO bonds and typically bear higher interest rates. However, compared to private financing, revenue bonds still have a relatively lower cost of capital. 	●
ND Legacy Fund - grant	<ul style="list-style-type: none"> No repayment requirement and zero cost of capital. 	●
Private financing	<ul style="list-style-type: none"> The blended cost of private capital (i.e., likely comprising equity and/or some form of commercial debt) is typically higher than financing available from federal, state or local public sources. However, it is also noted that this is driven by market conditions and in some instances, the differential cost of taxable finance as compared to tax-exempt sources can be relatively low. 	●
PABs	<ul style="list-style-type: none"> PABs are subject to repayment and incur a cost of capital, but where qualified projects are eligible as tax-exempt, such bonds can represent a relatively low cost of capital. 	●
Tax-exempt debt via non-profit conduit	<ul style="list-style-type: none"> Tax-exempt debt via non-profit conduit can usually achieve a public financing's interest rate, and as such the cost of capital is relatively low. 	●
Lease financing	<ul style="list-style-type: none"> Lease financing is often tax-exempt and as such has a relatively low cost of capital. 	●

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Funding options evaluation matrix – from Local perspective to meet Local cost share

Evaluation criteria	1	2	3	4	5
	Legal permissibility/ sponsor authority	Capacity to meet cost share	Accessibility	Timeliness	Low cost of capital
Federal appropriations	●	●	●	●	●
Federal agency grants	●	●	●	●	●
Federal agency loans	●	●	●	●	●
WIFIA loan program	●	●	●	●	●
RTF - infrastructure revolving loan fund	●	●	●	●	●
SRF loan program	●	●	●	●	●
BND Infrastructure Revolving Loan	●	●	●	●	●
PFA Capital Finance Program	●	●	●	●	●
ND Legacy Fund – loan	●	●	●	●	●
Local cash reserves	●	●	●	●	●
Local user revenues	●	●	●	●	●
Local sales tax/ property tax/special assessments	●	●	●	●	●
Local GO bonds	●	●	●	●	●
Local revenue bonds	●	●	●	●	●
Private financing	●	●	●	●	●
Interest buy-down (in conjunction with other sources)	●	●	●	●	●
PABs	●	●	●	●	●
Tax-exempt debt via non-profit conduit	●	●	●	●	●
Lease financing	●	●	●	●	●
National Rural Water Association revolving loan fund	●	●	●	●	●

Rating (ability to meet criteria): High ● Medium ● Low ●

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The criteria presented below are from the local perspective.

CRITERIA 1: Legal permissibility / sponsor authority The likelihood the public entity has sufficient direct legal or regulatory authority to use the funding or financing source. This evaluation is based on research provided by Ohnstad-Twitchell as part of the project.

Funding Options	Assessment summary	Rating
Federal appropriations	<ul style="list-style-type: none"> No material legal or regulatory barriers to local agencies receiving federal appropriations⁵. 	●
Federal agency loans & grants	<ul style="list-style-type: none"> No material legal or regulatory barriers, though only certain user groups or municipalities may be able to access specific federal loan and/or grant programs subject to purpose and eligibility criteria (e.g., some are targeted rural municipalities, small and disadvantaged communities, or have population limits etc). 	●
WIFIA	<ul style="list-style-type: none"> Eligible borrowers include local, state, tribal, and federal government entities 	●
RTF infrastructure revolving loan fund	<ul style="list-style-type: none"> Local agencies can apply for loans managed and administrated by the Bank of ND based on Resources Trust Fund revolving credit facility authorized by Senate Bill 2233 amendments (2015) 	●
SRF loan	<ul style="list-style-type: none"> Most local agencies can apply for State Revolving Fund loans as eligible political subdivisions 	●
BND Infrastructure Revolving Loan Fund	<ul style="list-style-type: none"> The Bank of ND Infrastructure Revolving Loan Fund provides loans to political subdivisions, the Garrison Diversion Conservancy District and the Lake Agassiz Water Authority 	●
PFA Capital Finance Program	<ul style="list-style-type: none"> The PFA makes loans to North Dakota political subdivisions for any purpose for which the political subdivision has the legal authority to borrow money, subject to credit requirements 	●
ND Legacy Fund loan	<ul style="list-style-type: none"> Project are currently limited from obtaining grants or funds from the Legacy Fund because any withdrawals from the Legacy Fund's principal after June 30, 2017, require a two-thirds vote in both houses of the Legislative Assembly. However, proposed bonding bill(s) currently under review could establish a revolving loan fund whereby loans may be administered by BND to create low interest loan funds for political subdivisions for critical infrastructure projects, including flood protection projects and water systems. 	●
Local cash reserves	<ul style="list-style-type: none"> No material legal or regulatory barriers to use of local cash reserves to fund project capital requirements 	●
Local user revenues	<ul style="list-style-type: none"> No material legal or regulatory barriers to use of local user revenues reserved to fund project capital requirements 	●
Local sales tax/ property tax/special assessments	<ul style="list-style-type: none"> In most cases, the municipalities served by the water supply systems can levy small taxes and assessments but the actual system themselves are more limited⁶. Further, in some instances such levies are generally limited to pay for system administration and operations rather than capital investment, or subject to thresholds (see other criteria). 	●
Local GO bonds	<ul style="list-style-type: none"> Local agency bonding authority tends to be project / agency specific but overall is relatively challenging for GO bonds⁷ 	●

continued

⁵ Exception - RRVWSP is the only project limited in its ability to obtain federal appropriations. Since RRVWSP is a State project and is trying to avoid federal cross-cutting permitting requirements, SWC is limited in its ability to obtain federal appropriations, loans, and grants

⁶ SWA has the authority to levy a property tax in conjunction with SWC, and GDCC has the authority to levy a tax, in both cases not to exceed one mill

⁷ For example: WAWSA does not have the authorization to issue market securities and only has authority to issue revenue bonds to repay loan obligations to the BND; SWA and NAWA are very limited in their ability to issue market backed securities at the local level due to the lack of collateral with state owned infrastructure; for RRVWSP, the responsibility for issuing debt falls on GDCC, which does not have taxing authority to support GO bonds, but revenue payments from its local member municipalities/rural systems can be pledged for debt service

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Local revenue bonds	<ul style="list-style-type: none"> Local agency bonding authority tends to be project / agency specific and overall is relatively mixed for revenue bonds 	●
Private financing	<ul style="list-style-type: none"> No legal or regulatory barriers to local agencies leveraging private financing, subject to the accompanying delivery model (for example, private finance in a DBFOM structure would be permissible but DBF currently not allowed) 	●
PABs	<ul style="list-style-type: none"> PABS are issued by (or on behalf of) a local or state government on behalf of a private entity and so no legal restrictions on local agencies to leverage, albeit specific project and associated capital need must meet PABs eligibility criteria to be a qualified project and fall within allocation volumes (see subsequent criteria) 	●
Tax-exempt debt via non-profit conduit	<ul style="list-style-type: none"> There is no express statutory authority precluding local agencies from using non-profit conduits for tax exempt financing 	●
Lease financing	<ul style="list-style-type: none"> There is no express statutory authority precluding local agencies from using lease financing 	●
National Rural Water Association revolving loan fund	<ul style="list-style-type: none"> Systems applying for NRWA loans must be public entities or nonprofit corporations including cooperatives, with up to 10,000 population and rural areas with no population limits. As such, some local agencies or their member communities may be eligible 	●

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CRITERIA 2: Capacity limit to meet cost share. The likely capacity of the funding / financing source to (by itself) materially contribute to the respective capital cost share requirements (absolute \$ terms) on an efficient construction schedule.

Funding Options	Assessment summary	Rating
Federal appropriations	<ul style="list-style-type: none"> There is limited precedent for current or recent direct federal appropriations to ND local agencies to meet water project capital costs at scale. 	●
Federal agency loans & grants	<ul style="list-style-type: none"> Most federal grants and loans are unlikely to be sufficient to meet total user cost share, but may be able to contribute to cost allocation of individual municipalities or communities 	●
WIFIA	<ul style="list-style-type: none"> WIFIA can finance up to 49% of eligible project costs for water projects at least \$20m in size, with no specific maximum or cap on scale. To date, the program loan size has averaged around \$[250]m, but has exceeded \$500m in some cases. 	●
RTF infrastructure revolving loan fund	<ul style="list-style-type: none"> Senate Bill No. 2233 (2013) provides for 10% of oil extraction tax revenue deposited in the RTF to be made available on a continuing basis to provide loans for water projects, while. House Bill No. 1020 (2017) provided the maximum to be allocated to the infrastructure revolving loan fund is \$26m. While not an immaterial sum, this is unlikely to be sufficient by itself to meet all or most of user cost share for mid-to large-scale water supply projects. 	●
SRF loan	<ul style="list-style-type: none"> The SRF programs have jointly provided more than \$1.5b in water and wastewater infrastructure funding in ND since they were established, and are generally able to accommodate lending at scale. Loan amounts have ranged from \$27m to \$126.5m 	●
BND Infrastructure Revolving Loan Fund	<ul style="list-style-type: none"> Cumulative loan amounts may not exceed \$15m per applicant over a maximum 30-year term. Further, this particular fund is intended to provide gap funding if the full project cost cannot be met through other funding sources, and as such is unlikely to represent a material contribution to total user cost share, though may be a valuable source for specific project beneficiaries contributing to user costs (i.e., municipalities or communities) 	●
PFA Capital Finance Program	<ul style="list-style-type: none"> PFA makes loans to North Dakota political subdivisions for any purpose for which the political subdivision has the legal authority to borrow money, subject to credit requirements and certain program requirements. Financing is available in any dollar amount as long as the ability to repay can be demonstrated. 	●
ND Legacy Fund loan	<ul style="list-style-type: none"> While the terms, conditions and lending thresholds associated with any future Legacy Fund loan program are as yet unknown, the scale of the fund- (principal balance of around \$6.3b at 31 December 2020 and forecast earnings of around \$500m in the next biennium) indicate that it should be able to accommodate borrowing at scale to meet local user cost share 	●
Local cash reserves	<ul style="list-style-type: none"> The ability of cash reserves to make a material contribution to local cost share will vary by project and local agency(ies), both in terms of available funds, competing priorities and permissible use. 	●
Local user revenues	<ul style="list-style-type: none"> The ability of user revenues to make a material contribution to local cost share will vary by project and local agency(ies), both in terms of available funds and permissible use. User revenues are also typically pledged as the primary revenue source to repay debt service for the local share of the projects, which accommodates greater leverage of funds than using revenue to fund upfront capex itself. 	●

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Local sales tax/ property tax/special assessments	<ul style="list-style-type: none"> ▪ The ability of local taxes and special assessments to make a material contribution to local cost share will vary by project and local agency(ies) but it is more likely that such funds will be levied as sources of revenue for repayment and/or credit backstops than construction capital outlay, given the time to build up sufficient reserves. Levy thresholds may also be imposed for specific projects.⁸ 	●
Local GO bonds	<ul style="list-style-type: none"> ▪ A local agency or municipality may be able to bond at a sufficient scale to meet its respective cost share (subject to permissibility and taxing powers), 	●
Local revenue bonds	<ul style="list-style-type: none"> ▪ A local agency or municipality may be able to bond at a sufficient scale to meet its respective cost share (subject to permissibility and revenue available to pledge for repayment), 	●
Private financing	<ul style="list-style-type: none"> ▪ There are no caps to private financing and it is typically scalable to meet capital needs, subject to project credit quality 	●
PABs	<ul style="list-style-type: none"> ▪ The ability to meet the user cost share will be constrained by the various PABs volume caps and eligibility requirements, and in the context of other projects awarded PAB funding in any particular year. There is also limited precedent of PABs being used to fund water projects at scale in ND 	●
Tax-exempt debt via non-profit conduit	<ul style="list-style-type: none"> ▪ There are no caps to debt issuance by a tax-exempt conduit and it is typically scalable to meet capital needs 	●
Lease financing	<ul style="list-style-type: none"> ▪ There are no specific caps to lease financing volumes, typically raised via lease revenue bonds or certificates of participation 	●
National Rural Water Association revolving loan fund	<ul style="list-style-type: none"> ▪ Loan amounts may not exceed \$100,000 or 75% of the total project cost. As such unlikely to make a material contribution to overall user cost share (though may be useful to smaller local agencies or municipalities to meet pre-development costs or short-term costs incurred for replacement equipment, small scale extension of services or other small capital projects that are not a part of regular operations and maintenance). 	●

⁸ For example, SWA has the authority to levy a property tax not to exceed one mill, in conjunction with SWC. Similarly, GDCD has the authority to levy a tax not to exceed one mill.

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CRITERIA 3: Accessibility. The likely ability of the relevant public entity to secure the relevant funds (i.e., the extent to which access to capital impacted by eligibility criteria, terms and conditions, inherent program risks, or competing priorities for the same funds).

Funding Options	Assessment summary	Rating
Federal appropriations	<ul style="list-style-type: none"> Federal appropriations often have certain eligibility criteria, and applications are often subject to a long review/approval process. 	●
Federal agency loans & grants	<ul style="list-style-type: none"> Agency grants often have certain eligibility criteria, and applications are often subject to a formal review/approval process. 	●
WIFIA	<ul style="list-style-type: none"> The EPA has certain eligibility criteria for WIFIA, and applications are subject to a formal review/approval process. Further, North Dakota projects would be competing with other US water projects to secure an application invitation. 	●
RTF infrastructure revolving loan fund	<ul style="list-style-type: none"> Given the RTF is already dedicated to construction of water infrastructure projects, and the SWC and BND have reasonable discretion on the allocation of such funds, the accessibility risks are likely to be relatively low, provided local agencies or relevant user groups can demonstrate sufficient creditworthiness to repay 	●
SRF loan	<ul style="list-style-type: none"> The SRF programs are relatively well established and the state has a reasonable amount of discretion over the allocation and terms of individual financing applications, subject to certain criteria 	●
BND Infrastructure Revolving Loan Fund	<ul style="list-style-type: none"> This loan program is intended to provide gap funding if the full project cost cannot be met through other funding sources or if there are no other funding sources available, and so an applicant must attempt to access other state and federal government funding options first in order to qualify for these funds. 	●
PFA Capital Finance Program	<ul style="list-style-type: none"> The PFA makes loans to ND political subdivisions for any purpose for which the political subdivision has the legal authority to borrow money, subject to credit requirements and certain program requirements. As such there are no material accessibility risks provided borrowers can demonstrate sufficient creditworthiness to repay 	●
ND Legacy Fund loan	<ul style="list-style-type: none"> Any applications for Legacy Fund loans (if/when authorized) would be competing with a potentially wide range of projects since the primary purpose and beneficiaries of the fund are yet to be determined, and require a vote of at least two-thirds of the members elected to each house of the legislative assembly. However, critical infrastructure projects have been mooted by some legislators as a likely key focus of the fund, which may benefit regional water supply projects. 	●
Local cash reserves	<ul style="list-style-type: none"> Accessibility of cash reserves to meet local project cost share will likely be governed by project and/or user specific considerations depending on permissible use, precedent and competing priorities 	●
Local user revenues	<ul style="list-style-type: none"> User revenues are typically limited to paying for operations, maintenance, and renewal of the systems, rather than upfront capital outlay, or used as a source of debt service repayment. Accessibility to meet local project cost share will therefore be project and user entity specific. 	●
Local sales tax/ property tax/special assessments	<ul style="list-style-type: none"> Unless already in place, the establishment of local taxes or special assessments to supplement sources of capital or provide credit backstops can be relatively complex and require sufficient political and public support, though the Fargo-Moorhead Floor Diversion Project demonstrates that this is achievable on a project-by-project basis. 	●
Local GO bonds	<ul style="list-style-type: none"> In addition to mixed levels of permissibility, there are typically competing priorities for GO bond issuances and the relevant agency or user group may not have sufficient taxing power — GO bond accessibility is likely to be a project and user-specific consideration 	●
Local revenue bonds	<ul style="list-style-type: none"> In addition to mixed levels of permissibility, the relevant agency or user group may not have sufficient revenues to pledge — revenue bond accessibility is likely to be a project and user-specific consideration 	●

continued

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Private financing	<ul style="list-style-type: none"> While private financing is subject to lender due diligence and credit committee approvals, which requires the project to be sufficiently bankable, there are few inherent access risks beyond this 	●
PABs	<ul style="list-style-type: none"> Access to PABs required projects to meet various eligibility criteria and tests and compete with other projects subject to the relevant volume caps. 	●
Tax-exempt debt via non-profit conduit	<ul style="list-style-type: none"> While in theory access risks are low provided a suitable non-profit conduit can be identified and a suitable financing package established, it remains a relatively untested structure for large-scale/capital intensive infrastructure projects — and water in particular — having mainly been used for smaller-scale social infrastructure or real estate projects to date. 	●
Lease financing	<ul style="list-style-type: none"> While in theory access risks are low provided a suitable transaction structure and financing package can be developed with the lessor, in ND, there is limited precedent for use of lease financing to fund water projects. Water supply projects in particular may be unsuitable as the nature of the assets do not facilitate a traditional lessee/lessor relationship whereby one party would transfer equipment for period rent payments. 	●
National Rural Water Association revolving loan fund	<ul style="list-style-type: none"> Accessibility will mainly be limited by the purpose for which the funds are being sought and ability to demonstrate eligibility – the loan program was established to provide financing to eligible utilities for pre-development costs associated with proposed water and wastewater projects, short-term costs incurred for replacement equipment, small scale extension of services or other small capital projects that are not a part of regular operations and maintenance. 	●

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CRITERIA 4: Timeliness. The likelihood the funding/financing source will be available to deliver the project on the most efficient schedule.

Funding Options	Assessment summary	Rating
Federal appropriations	<ul style="list-style-type: none"> Federal appropriations are subject to annual federal budgeting process and so the availability each year may be inconsistent, introducing potentially significant timing and planning risk for large-scale water infrastructure projects that require multi-year capital investments 	●
Federal agency loans & grants	<ul style="list-style-type: none"> Federal agency grants and loans are subject to application processes that may impact the timing of receiving funds if successful. There may also be uncertainty year-to-year as to the volume of funds available for specific programs, which could impact ability to rely on such sources during initial capital planning. However, timing risks will be highly dependent on the specific program. 	●
WIFIA	<ul style="list-style-type: none"> The WIFIA program is subject to application windows that need to be factored into the timing of the project planning and timing of capital need. There is at least one application window per year. The end-to-end application process varies by project but is typically in the range 9-12 months. However, if approved, a project should be able to draw on the loan as needed to meet eligible project costs 	●
RTF infrastructure revolving loan fund	<ul style="list-style-type: none"> The funds available in the revolving loan program and timeliness of award may depend on the volume and timing of oil extraction revenues and the appropriation of these into the SWC budget, since just 10% of oil extraction moneys deposited in the RTF are made available on a continuing basis for making loans. 	●
SRF loan	<ul style="list-style-type: none"> SRF loans are subject to application processes that may impact the timing of securing and receiving funds, and the level of competition may vary year to year. However, once secured, funds can be drawn to accommodate efficient delivery schedule 	●
BND Infrastructure Revolving Loan Fund	<ul style="list-style-type: none"> This loan program is intended to provide gap funding if the full project cost cannot be met through other funding sources or if there are no other funding sources available, and so an applicant must attempt to access other state and federal government funding options first in order to qualify for these funds. Further, application windows are opened as funding is available. As such, funds may not be available when needed, but could also facility more timely delivery if gap funding is needed and can be secured 	●
PFA Capital Finance Program	<ul style="list-style-type: none"> Although subject to application, the PFA has a reasonable degree of control over the process, and timing risks are not considered to be material 	●
ND Legacy Fund loan	<ul style="list-style-type: none"> Limited precedent and lack of formal application and approvals process makes timing to secure funds and ability to meet capital costs as needed uncertain at this time 	●
Local cash reserves	<ul style="list-style-type: none"> Limited timing risk where use at local user discretion and control 	●
Local user revenues	<ul style="list-style-type: none"> Limited timing risk where use at local user discretion and control 	●
Local sales tax/ property tax/special assessments	<ul style="list-style-type: none"> Typically involves political and public approvals, which may introduce some timing risk 	●
Local GO bonds	<ul style="list-style-type: none"> Issuer will typically have reasonable degree of control and discretion over timing (subject to preparation of relevant representations and documents) and the proceeds can typically be allocated to the relevant recipient(s) in one go, resulting in limited timing risk 	●
Local revenue bonds	<ul style="list-style-type: none"> Subject to preparation of relevant documentation underpinned by robust revenue pledges, the issuer typically has a large degree of control over timing of bond issue and the proceeds can typically be allocated to the relevant recipient(s), resulting in limited timing risk 	●

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Private financing	<ul style="list-style-type: none">▪ Subject to a well-structured and bankable financing package private financing can typically be raised to accommodate a project's capital needs in a timely manner.	●
PABs	<ul style="list-style-type: none">▪ Subject to an application process that need to be factored into the timing of the project planning and timing of capital need. However, if approved, the loan should be available to draw as needed by the project.	●
Tax-exempt debt via non-profit conduit	<ul style="list-style-type: none">▪ Subject to a well-structured and bankable bond package, issuance and allocation of proceeds can typically accommodate a project's capital needs in a timely manner	●
Lease financing	<ul style="list-style-type: none">▪ Subject to a well-structured and bankable financing package, issuance and allocation of proceeds can typically accommodate a project's capital needs in a timely manner	●
National Rural Water Association revolving loan fund	<ul style="list-style-type: none">▪ Subject to application process, though bespoke nature of program indicates NRWA has reasonable degree of control and discretion over process and timing	●

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CRITERIA 5: Low cost of capital. The source of capital does not incur additional economic burden on the relevant public entity (i.e., the extent to which the capital needs to be repaid, and any associated financing costs such as interest or coupon rate).

Funding Options	Assessment summary	Rating
Federal appropriations	<ul style="list-style-type: none"> No repayment requirement and zero cost of capital. 	●
Federal agency loans & grants	<ul style="list-style-type: none"> Federal agency grants don't require repayment and so have no cost of capital. Agency loans will typically have a repayment and interest component, though typically at a preferential rate 	●
WIFIA	<ul style="list-style-type: none"> Interest rates are similar to US Treasury rate (~2%), representing a relatively low cost of capital 	●
RTF infrastructure revolving loan fund	<ul style="list-style-type: none"> Fixed interest rate of 1.5% 	●
SRF loan	<ul style="list-style-type: none"> The current interest rate for SRF loans is 2%, while the rate for eligible recipients that do not qualify for tax exempt financing is 3.0% 	●
BND Infrastructure Revolving Loan Fund	<ul style="list-style-type: none"> Interest is charged at a fixed rate of 2% 	●
PFA Capital Finance Program	<ul style="list-style-type: none"> Since the CFP has been assigned a rating of "AA-" by S&P, it is typically able to achieve relatively low interest rate on its bonds and pass this through to the loans made under the CFP 	●
ND Legacy Fund loan	<ul style="list-style-type: none"> Terms yet to be determined, but proposed legislation indicates preferential rates of 1.5% to 2% 	●
Local cash reserves	<ul style="list-style-type: none"> Typically no repayment obligations or cost of capital (though opportunity cost of use may be a consideration) 	●
Local user revenues	<ul style="list-style-type: none"> Typically no repayment obligations or cost of capital (though opportunity cost of use may be a consideration) 	●
Local sales tax/ property tax/special assessments	<ul style="list-style-type: none"> Typically no repayment obligations or cost of capital (though opportunity cost of use may be a consideration) 	●
Local GO bonds	<ul style="list-style-type: none"> Coupon rate will be highly dependent on relevant issuing entity. Where this involves a project agency with limited issuing history, the rate may be less favorable than a state or city-level bond, unless a credit enhancement strategy can be developed or conduit issuer identified 	●
Local revenue bonds	<ul style="list-style-type: none"> Cost of capital on revenue bonds will be determined on a case-by-case basis. Since revenue bonds are only secured by specific project revenues, they are considered riskier than GO bonds and typically bear higher interest rates. However, compared to private financing, revenue bonds still have a relatively lower cost of capital. 	●
Private financing	<ul style="list-style-type: none"> The blended cost of private capital (i.e., likely comprising equity and/or some form of commercial debt) is typically higher than financing available from federal, state or local public sources. However, it is also noted that this is driven by market conditions and in some instances, the differential cost of taxable finance as compared to tax-exempt sources can be relatively low. 	●
PABs	<ul style="list-style-type: none"> PABs are subject to repayment and incur a cost of capital, but where qualified projects are eligible as tax-exempt, such bonds can represent a relatively low cost of capital. 	●
Tax-exempt debt via non-profit conduit	<ul style="list-style-type: none"> Tax-exempt debt via non-profit conduit can usually achieve a public financing's interest rate, and as such the cost of capital is relatively low. 	●
Lease financing	<ul style="list-style-type: none"> Lease financing is often tax-exempt and as such has a relatively low cost of capital. 	●
National Rural Water Association revolving loan fund	<ul style="list-style-type: none"> Loans will be made at the lower of the poverty or market interest rate as published by USDA's Rural Utilities Service, with a minimum of 3% at the time of closing. This is a relatively higher cost of capital than the majority of other tax-exempt or preferential rate borrowing options set out above 	●